

**Elderly Medicine**  
**A Training Guide**

Edited by

**Gurcharan S. Rai**

*Whittington Hospital  
London, UK*

and

**Graham P. Mulley**

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MARTIN DUNITZ

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First published in the United Kingdom in 2002  
by Martin Dunitz Ltd, The Livery House, 7–9 Pratt Street,  
London NW1 0AE

Tel.: +44 (0) 20 7482 2202  
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Website: <http://www.dunitz.co.uk>

This edition published in the Taylor & Francis e-Library, 2004.

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A CIP record for this book is available from the British Library.

ISBN 0-203-21431-5 Master e-book ISBN

ISBN 0-203-27095-9 (Adobe eReader Format)  
ISBN 90-5823-234-4 (Print Edition)

Composition by Scientifik Graphics (Singapore) Pte Ltd

**Distributed in the USA by**

Fulfilment Center  
Taylor & Francis  
7625 Empire Drive  
Florence, KY 41042, USA  
Toll Free Tel.: +1 800 634 7064  
E-mail: [cserve@routledge\\_ny.com](mailto:cserve@routledge_ny.com)

**Distributed in Canada by**

Taylor & Francis  
74 Rolark Drive  
Scarborough, Ontario M1R 4G2, Canada  
Toll Free Tel.: +1 877 226 2237  
E-mail: [tal\\_fran@istar.ca](mailto:tal_fran@istar.ca)

**Distributed in the rest of the world by**

ITPS Limited  
Cheriton House  
North Way  
Andover, Hampshire SP10 5BE, UK  
Tel.: +44 (0)1264 332424  
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# Preface

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Geriatric medicine is now a well-recognised and popular medical specialty. Most textbooks on geriatric medicine and gerontology are written either as reference textbooks or aimed at recently qualified doctors. There is no training guide primarily for trainees in geriatric medicine. We hope that this book will fill this important gap.

This is not a standard textbook, but a lively guide to active learning. The chapters are practical, thought-provoking and contain evidence (where it exists) and common sense advice (where it does not). The book is not intended to be comprehensive. We have concentrated first on mainstream issues, which may not always get the attention they merit. We have also focused on topics which may perplex both the novice and the experienced clinician. We hope that those who train doctors in geriatric medicine will find the book as interesting and informative as we believe trainees will.

Almost two-thirds of hospital beds are occupied by people aged 65 and over and this is the most important group in the rising number of emergency admissions. Thus trainees in General (Internal) Medicine and other medical specialties, as well as consultant general physicians, are often involved in providing medical care to older people. We feel they would also find this book useful in improving their knowledge of elderly care and of practical value in managing their elderly patients.

Although based on the curriculum in geriatric medicine prepared by the Royal Colleges of Physicians (and therefore written primarily for trainees in the United Kingdom), this book should prove useful to those training in geriatric medicine in Europe, America, Australasia and elsewhere. The authors are experts and enthusiasts in their subjects. To improve relevance for consultants in training, many have involved their trainees in the preparation of their chapters.

Most chapters have key references that have been classified using a star system. These direct readers to essential reading, as to well as those articles and chapters that they might find interesting. In addition, some multiple choice questions have been included for self-assessment to check understanding.

It has been a pleasure to devise and edit this guide. We are indebted to all the contributors, who have given their time, skills and energy to writing such clear, informative and wise chapters. We hope that you enjoy the book and learn much from it.

Gurcharan S. Rai  
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# **PART 1**

## **GENERAL THEMES**



---

# 1. Biological ageing—its relevance to geriatricians

Finbarr C. Martin and Jane E. Preston

---

## INTRODUCTION

You can probably practise competently as a geriatrician knowing little about the meaning or mechanisms of biological ageing. Most of our work with the current cohort of older people is concerned with illness, disability or death associated with recognised diseases. These diseases are considered to be the result of environmental factors such as accidents, infection, carcinogens and so on. Genetic and lifestyle differences contribute to the considerable variability observed between individuals. Age-related increased incidence of cardiovascular disease, cancers, certain infections and arthritis suggest that ageing may be a contributory factor in their development. Preventative public health measures highlight avoidable risk factors but treatments are not predicated on affecting the underlying ageing processes. Likewise, although remedial therapies and other rehabilitative approaches acknowledge the important loss of functional reserve in older patients, the therapeutic optimism characteristic of modern geriatric medicine is not based on attempts to influence ageing. Rather, it is based on the alternative conviction that much of the disability and distress that we see is not an inevitable part of growing old.

Yet we recognise that various intrinsic ageing changes contribute to the impairment which renders older people susceptible to this loss of reserve. Even minor additional insult may result in disability, manifest as non-specific clinical presentation, or cascade into multi-system or multi-organ failure. Although these sequelae are common in geriatric medicine, the complex interrelationship itself is not an issue of ageing. In the absence of a

minor additional insult, are the ageing changes themselves sufficient to cause disease, disability or death and if so, how?

In this chapter we aim to address briefly several questions:

- What is ageing?
- Why does ageing occur in humans?
- What are the biological mechanisms of ageing?
- How do the biological ageing changes relate to the degenerative diseases of old age?
- How does ageing cause death?
- Are there any clues to a health strategy for successful ageing?

## DEVELOPMENT AND AGEING

The lifespan of mammals is sometimes separated into the stages between fertilisation and birth, infancy to sexual maturity, then adult reproductive life with gradual deterioration, with or without a distinct post-reproductive phase, until death. Indeed, in human societies with long life expectancies, the onset of maturity coincides with the nadir of the age-specific mortality curve. But some cellular processes and molecular physico-chemical changes which are commonly regarded as ageing (such as the cross-linkages in the collagen molecule) do not begin at a defined stage but develop gradually whether in the test-tube or the living cell. There is no evidence of an overall controlling “clock” governing the pace of change observed over time in various cells, tissues and physiological systems. Since the relation between some of these changes and death is not established, limiting the term “ageing” to those for which such

causality has been established would be a severely restricting definition. So we are left without a clearcut definition. The consensus in biological gerontology is to view ageing as those changes that deviate from the state presumed to be advantageous at the stage of optimal reproductive capacity. This makes sense from an evolutionary viewpoint.

### **The Evolution of Ageing**

Not all organisms age. For example, single cell organisms reproduce by division without having undergone the range of ageing changes seen in multi-cellular organisms. Thus as life forms have become more complex, ageing has evolved. A number of factors point to the central role of relatively few genes in the determination of the maximum lifespan. Longevity is species specific to the extent that even closely related species (but with distinct features of their natural habitat or habitus) can have substantially different longevity—even when protected from predators or deprivation. Familial inheritance of lifespan is considerable. Nevertheless, conditions such as Werner's syndrome, which is due to genetic mutation sufficiently specific to produce a dramatically fast ageing syndrome with life expectancy of about 40 years, do not prevent normal intra-uterine development and childhood.

Most animals in the wild, like humans until several hundred years ago, live no more than 50% of their potential lifespan. So this potential was achieved by inheritance through the reproduction of relatively young animals, not as a result of selective survival and successful reproduction of long-lived animals. In this sense, the maximum potential lifespan has exerted little or no direct evolutionary pressure. On the contrary, it must have developed as an indirect result of evolutionary pressures on other characteristics. To put it another way, natural selection has favoured genotypes that produce both fitness to successfully reproduce during young adulthood and ageing of the phenotype with a maximum lifespan built in. Ageing has not evolved 'for itself' but as a consequence of other characteristics being preferentially selected under evolutionary pressures.

Central to this argument is that the tissues in multi-cellular animals show specialisation, with

separation of the tissues concerned with maintaining life now, the soma, from the tissues concerned with propagation of the species through inheritance, the germ line. Biological activity results in inevitable changes at the molecular, cellular and tissue level. These are described in more detail in the next section, but the general point is that these changes may sooner or later impair cellular or organ function and survival. Thus there is evolutionary pressure to develop ways of preventing or overcoming deleterious changes only in so far as they impede the fitness of the animal. In evolutionary terms, the fitness of an animal is its ability to produce offspring. In conditions of finite environmental resources (food etc.) and high risk of 'premature' death, the evolution of form and function capable of reaching this fitness involves a number of compromises in the best use of biological energy. In Kirkwood and Cremer's 'Disposable Soma' theory, the separation of the germ line from other cells in the body has allowed the selection of mechanisms for specific accurate preservation of the germ line, but at the expense of the biological work needed to preserve the soma. Since the soma and the genetic material in the cells of the soma are not available for inheritance, preserving them for immortality in the face of inevitable death through predation, accident or deprivation is energy wasted.

Evolution has favoured strategies which have devoted energy and resources to enabling the soma to attain reproductive fitness with the germ line safe from damage. There are several features evident in the germ cell line, e.g. the ovary, which may result in enhanced protection for the genetic material compared to those present in the cells of other tissues. It would be expected from this theory that the cellular mechanisms to protect the soma from damage would be better developed in species likely to live longer. Thus those adapted to their environment in such a way as to experience a lower rate of predatory or accidental death: primates, for example, would differ in their anti-ageing mechanisms from species demonstrating an almost exponential survival curve such as the mouse. In neither case then would the effects of ageing be prominent. Available evidence confirms this prediction. It is the preservation of mice in captivity or humans through recent cultural developments that has resulted in ageing becoming evident and relevant to the individual animal.

## The Theoretical Mechanisms of Ageing

The genetic contribution to ageing has prompted programmed ageing theories. These are attractive because they suggest the presence of an ageing gene which, if we look hard enough, may be isolated and modified in favour of longevity. The reality is proving far more complex. Genes play their part, with an estimated two-thirds of the genome having some effect on ageing changes. A major contributor, however, lies in the build-up of random damage which is left unrepaired by inefficient cellular 'somatic housekeeping' mechanisms, as predicted by the disposable soma theory. Strehler (1964) proposed that ageing should be reserved for those changes which occur gradually and universally, not only in particular living circumstances.<sup>1</sup> Universality must allow for some within-species variability. Gradualness predisposes some knowledge of the basic mechanisms which, like all natural phenomena, may have episodic manifestations or effects. It would be misleading to suggest that the cause of ageing is essentially intrinsic, since it occurs in the context of the organism's biological interaction with the environment.

This overview of mechanisms will be confined to three areas of research making major contributions to our understanding of ageing and disease at the cellular and molecular levels:

- Oxidative stress
- Protein glycation
- Cell senescence

However, it should be kept in mind that recent reviews identify over 300 theories for contributors to these processes.

### *Oxidative stress*

Oxidative stress occurs when the production of reactive oxygen species (ROS) free radicals exceeds the available antioxidant defence systems. The most common ROS in mammals are the superoxide anion, hydrogen peroxide, the hydroxyl radical and nitric oxide radical. ROS come from a variety of sources, primarily the mitochondria which form superoxide free radical anions alongside ATP, both products of oxidative

phosphorylation. Other sources include the macrophages, particularly during chronic infections, the peroxisomes involved in lipid degradation and cytochrome P450 involved in drug detoxification. Some support for the importance of oxidative stress in the development of ageing comes from Rubner's rule. This derives from the observation that mammalian species metabolise a similar number of calories per gram per lifespan, suggesting that the results of oxidative metabolism on cells set a maximum lifespan via oxidative damage.

Interaction of ROS with DNA, both mitochondrial and nuclear, can result in breaks in the sugar-phosphate backbone. This results in mutations or deletions, especially in the mitochondria where DNA repair mechanisms are less efficient than in the nucleus. Damage accumulates over time and may be passed on to daughter cells. The process continues until oxidative phosphorylation is compromised, ATP production declines and cells begin to die. The outcome in vascular system endothelial cells is the production of adhesion molecules by dying cells. These attract neutrophils and macrophages in a local inflammatory reaction releasing hydrogen peroxide. This additional ROS load further damages the compromised cell as well as the extracellular matrix and surrounding cells, resulting in a cascade of oxidative stress.<sup>2</sup> In the skin, photon-induced free radicals causing local inflammation may result in a similar oxidative stress cascade. In many tissues these mechanisms may also be initiated by infection, smoking, and advanced glycosylation end products (AGEs) following sugar-protein interaction, seen particularly in long-lived cell types such as neurones. An alternative fate for cells with specific nuclear DNA mutation following oxidative stress may be transformation into an immortal cell line and the beginning of a tumour.

Attempts to shift the balance away from oxidative stress by increasing antioxidant levels have had some limited influence on maximum lifespan. There are few effects in mammals, but the fruit fly *Drosophila melanogaster* shows increased maximum lifespan following mutations enhancing antioxidant enzyme activity (superoxide dismutase, SOD, and catalase).<sup>3</sup> Increases in SOD in humans is seen with Down's syndrome, but rather than affording protection, the brain tissue shows greater

than expected free radical damage because SOD converts superoxide radicals into hydrogen peroxide. Without elevation of catalase or glutathione peroxidase, the final neutralisation step to water is not completed. High dietary intake of antioxidants affords some protection against visual cataract, memory loss and vascular damage. Although much of this information comes from epidemiological studies, the latter is one of few examples of controlled trials.

The free radical theory of ageing has evolved since first proposed and developed by Harman in the 1950s as a cause of ageing and disease. Free radicals are now considered key in the development of age-related pathophysiology.<sup>4</sup>

#### *Protein modification by glycation*

Many forms of protein modification occur increasingly with age. These include oxidative damage and addition of excess phosphate groups thought to be factors in both the slowing of new protein synthesis in later life, and specific diseases such as Alzheimer's disease (AD). An important, well-characterised contributor to post-translational change is modification by glycation and the formation of AGEs as the end result of a series of spontaneous reactions between any protein and local sugar molecules, particularly ribose in RNA and fructose. The final steps of the reaction sequence are further encouraged by oxidative stress. This can result in a toxic, fluorescent aggregation of protein which resists being broken down by the cells, and produces the yellowing hue of ageing nails and cornea. The formation of AGEs causes damage to both the structure and function of any affected proteins, and is seen in the extreme in diabetes mellitus when sugar for initiating the reaction is available in excess.

In Alzheimer's disease, glycated tau protein may stabilise paired helical fragments contributing to the neurofibrillary tangles and AGEs also play a role in amyloid plaque formation and activation of microglia.<sup>5</sup> AGEs also contribute to development of diabetes mellitus<sup>6</sup>, atherosclerosis, macular degeneration, cataract formation and nephropathy.

In the microscopic worm (*C. elegans*), used as a model of ageing, mutation of genes for insulin receptor subunits and the associated downstream intracellular messengers have resulted in the worm's maximum lifespan doubling. This has also

illustrated a link between glucose metabolism and ageing which may prove to be relevant to human ageing and diabetes.

Research to counter the effects of AGEs has concentrated with some success on preventing their formation<sup>7</sup>, cleaving formed cross-links with AGE 'breakers' or reducing oxidative stress for example with oestrogen or NSAIDs. Although all of these studies are in the very early stages of research as possible therapies, a range of age-related diseases may potentially benefit.

#### *Cell senescence and loss of telomeres*

In the early 1960s, Hayflick and Moorhead observed that cells in culture could undergo only a limited number of cell divisions (the 'Hayflick limit'). Further research showed that cultured fibroblasts from old donors could undergo fewer cell divisions than those from young donors, that cells frozen for extended periods could 'remember' how many divisions they had left, and more recently senescent cells which had stopped dividing could be identified *in vivo*. These and other studies pointed to a 'biological clock' capable of counting the number of cell divisions and whose possible function was to prevent cancer, allowing the animal to reach healthy reproductive maturity; the trade-off being limited cellular replication.

The site of this 'clock' is now largely held to be the telomere end regions of DNA, which shorten with each cell division. Telomeres consist of repeat sequences of DNA which shorten during DNA replication because polymerase is not able to copy to the end of the 3' strand of linear DNA. This is compounded by poor telomeric DNA repair mechanisms following damage, such as oxidative stress, resulting in the telomeres becoming sensors for damage. When telomeres are sufficiently eroded, cells stop dividing. As yet, the exact mechanism linking the two events is unclear, but the cells do not then die, rather they are senescent and at the end of their replicative lifespan.

Detection of senescent cells *in vivo* poses technical difficulties but studies have implicated them in the cornea, blood vessels and skin. Senescent cells may have a role in tissue ageing because of the limited regenerative potential of tissues containing large numbers of senescent cells. This would be important for cells with a naturally high turnover, such as the immune system, or in

response to damage, such as in turbulent or branched regions of the vascular system, and skin or eye wounding. Evidence is accumulating that this holds true.<sup>8</sup>

Patients with fast ageing Werner's syndrome display damaged DNA due to lack of helicase required for DNA repair and mRNA formation, and in particular demonstrate shortened telomeres. Telomeres from Dolly, the cloned sheep, are also shortened, suggesting that her biological age is greater than expected and closer to her donor 'mother' age.

Immortal cells overcome the problem with the enzyme telomerase, a ribonucleoprotein with an RNA template for elongating telomeres before replication. Most human cancers, all human germline cells and some stem cells contain the enzyme. Targeting of telomerase is being developed as a potential cancer therapy. Telomerase has also been artificially introduced into normal fibroblasts by viruses carrying the gene (transfection), resulting in extended lifespan but still with normal phenotype and karyotype, raising the future possibility of extension of replicative lifespan *in vivo*.

## AGEING AND DEATH

It is remarkable that although an increasing proportion of the human population attains an age approaching the probable species maximum, fewer deaths are recorded as due to old age. Yet surely ageing is the most natural of the natural causes! Perhaps the explanation for this paradox is largely cultural. An additional factor, however, is that whilst the inevitability of death may be accepted as the defining characteristic of ageing, the level at which this relationship operates is not clear. The above discussion suggests several possibilities for reduced functional resistance or ability to repair damage, but the processes going on in the cases of 'quiet death' without clearcut disease have yet to be clarified.

### Successful Ageing, Usual Ageing and Disease

The distinction between usual and successful ageing was raised by Rowe and Khan (1987) to draw attention to the difference between those older people without overt disease and who remain

essentially independent until they experience a sudden apparently natural death, and those people who clearly suffer one or a series of potentially avoidable degenerative or involuntional diseases resulting in frailty and dependency.<sup>9</sup> The processes involved in both successful and usual ageing are the culmination of the factors mentioned above: the interaction between genes, ageing-induced molecular damage and environmental factors. The simple view that one or other acts independently is no longer tenable.

Nevertheless, distinguishing a phenomenon as ageing rather than disease is an important discipline in ensuring that we identify potentially avoidable changes which therefore provide an agenda for both public health and clinical medicine. The above considerations of biological mechanisms have illustrated that at least for oxidative stress and glycation the causation of disease processes are multifactorial and include ageing. The relative contributions of ageing and other potentially avoidable factors is not yet clear and chasing the holy grail of "normal intrinsic ageing" may be unhelpful. Potentially, factors limiting these processes could enter the practice of adult medicine in the medium term. Our clinical practice and definition of the speciality of geriatric medicine would be fundamentally altered by such developments.

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## 2. Social gerontology

**Keith Harkins**

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Social gerontology is the study of the social aspects of ageing. The purpose of this brief chapter is to give an insight into some of the issues surrounding the subject, and to stimulate thought about them. The data quoted in this section are taken from several sources, mainly governmental surveys, and for those purposes, “elderly” translates as those of a pensionable age.

There are over 10,500,000 pensioners in the UK, accounting for about 18% of the total population. Such a large group of people is heterogeneous in all respects, and old people are at least as diverse a population as any other age group.

### DEMOGRAPHICS

There have been large increases in the numbers of elderly people in recent years, which mirrors their increasing life expectancy (see Table 1). A boy born in 1996 could expect to live to about 75 years. If we survive into late middle life, our life expectancy increases, so a 60-year-old man can expect to live for another 18.5 years, and a woman of that age can look forward to another 22.4 years.

It is the over-75s who are increasing in number most, both as a proportion of the total population and in absolute terms. It is expected that the total

**Table 1.** Life expectancy at year of birth (United Kingdom).

	Men	Women
12th century	35	35
1841	40	42
1931	58.4	62.4
1961	67.9	73.8
1996	74.6	79.7

number of elderly people will plateau, but the proportion of very old will increase. If the health of this age group does not alter much, there will be important implications for both health and social services. As longevity improves, so might the overall health of the population at any given age. This would therefore mean less of a demand on such services. Only time will tell.

### ATTITUDES

*“Age is something that doesn’t matter, unless you are a cheese”—Billie Burke*

Generally speaking, young people have a negative opinion about what it means to be old. From surveys exploring attitudes, old age is viewed as a time of loss, poor health, and social isolation. There are many negative stereotypes of older people. Some of the commonly held misconceptions are:

- Old people are all the same
- Old people are lonely
- Old people are miserable
- Old people are in poor health
- Old people are less intelligent
- Old people cannot learn new things

The expectations of younger generations are that they will feel unwanted and lonely in their old age. The truth, however, is that in general old people have quite a good time. Most function well in society, and all these negative aspects of ageing are much less of a problem in the eyes of old people than we expect them to be. It is unusual for elderly people to complain about either their standard of living or financial situation—despite their relative

poverty in modern-day society. Perhaps after surviving world wars, the great depression and Margaret Thatcher, they are now better off than they used to be, even if they are not wealthy in relation to others in our society.

The notion that the welfare state has taken over caring for elderly people in place of their family is a common misconception. If anything, social services have enabled more families to continue caring for their relative at home. It is a rarity for elderly people to feel rejected by their family. Although the overall contact with families reduces with advancing age (due to the family dying off), most elderly people who have taken part in surveys are happy with the level of contact from their families.

Another area where negative stereotypes have resulted in discrimination against older people is in the workplace. The belief that older workers are slow and unproductive, difficult to retrain, and absent from work more than younger workers has led to older people struggling to find work. There is little evidence that any of these assumptions are true, indeed the converse may be the case.

## RETIREMENT AND PENSIONS

*“Retirement kills more people than hard work ever did”*—Malcolm Forbes

The concept of retirement is relatively new. Until the late nineteenth century, people used to work until they were physically incapable of continuing their job. In 1859, civil servants became the first occupational group in the UK to receive a pension, at a fixed retirement age of 65 years. This scheme was introduced in an attempt to make the service more efficient by pensioning off the older employees, who were thought to be slow and unproductive. Later that century, older workers found their skills were less in demand because of changing working practices and economic depression. On a political level, pensioning these older workers off was thought of as a legitimate way of excluding them from the job market, thus increasing employment for younger workers, and at the same time improving productivity and efficiency. Therefore pensions were introduced to increase economic efficiency, rather than for the welfare of older workers. Schemes were set up for

governmental workers initially, and it was not until 1908 that Lloyd George introduced the non-contributory means-tested state benefit for those over 70.

The timetable for the introduction of pensions in the UK was:

- 1859 – First pension scheme for civil servants
- 1908 – First non-contributory means-tested pension introduced in the UK for over-70s
- 1925 – Age for qualifying for a pension reduced to 65 years
- 1940 – Age for women qualifying for a pension reduced to 60 years
- 2010 – Age for women qualifying for a pension to be increased to 65 years

Since the 1970s there has been an increasing trend to retire early. Many workers have planned this and voluntarily opt to leave work early. For others, rapidly developing advances in workplace technology and high levels of unemployment have made work impossible to find, and they are forced into early retirement.

## FINANCES

*“In a country well governed, poverty is something to be ashamed of”*—Confucius

As with any large group of people, there are enormous variations of income between the poorest and richest pensioners. At one end of the spectrum there are younger pensioners who are more likely to be half of a couple, have an occupational pension and have more disposable income. At the other, more elderly pensioners (usually single women) are more likely to be solely dependent on state benefits, and subsequently struggle to get by.

Most pensioners are not well off. Here are some basic facts and figures to demonstrate this:

- When compared to average full-time earnings of £351 per week, the average single pensioner has a gross weekly income of £146
- Only 36% of pensioners are liable to pay income tax
- Only 1.5% pay higher rate income tax
- 50% of pensioners receive at least three-quarters of their income from state benefits

- 17% of pensioners receive all their income from state benefits

As these figures show, most pensioners rely heavily on state benefits. This is unfortunate because the state pension has continually lost value in relation to average earnings. Between 1975 and 1980, increases in the state pension were linked to increases in either prices or earnings—whichever was higher. Since 1980, pension increases have been related only to price increases. As earnings have risen faster than prices, the relative value of the state pension has decreased from 22.6% of average earnings in 1980 to 16.8% in 1998.

About 40% of pensioners also rely on means-tested benefits, such as income support, housing benefit and council tax benefit, to supplement their pension. In addition to these, there are between 400,000 and 700,000 pensioners who are entitled to these benefits but do not claim them. The reasons for this are not clear.

About 20% of pensioners receive disability benefits such as attendance allowance or disability living allowance. Again, the take-up of these benefits is low, with about half of people entitled to them not claiming.

Occupational pensions, which are becoming more common and more important, are received by about two-thirds of pensioners. The median value of these is £53 a week.

In summary, there are a few wealthy pensioners. About a third have moderate incomes, sufficient for them to need to pay income tax. The remaining two-thirds are reliant on state benefits, and have income below the income tax threshold. Of these, up to 700,000 are not receiving all the benefits to which they are entitled.

## HOUSING

*“Be nice to your kids—they’ll be choosing your nursing home”*

Elderly people do have an advantage over the young in that they are more likely to have paid off their mortgage and have a solid asset in their house. About 60% of over-65s are owner-occupiers. There is often a problem, however, with the condition of the houses in which elderly people live. The comfort of their home can be

particularly important for the elderly because they spend more time there. The English house survey of 1996 suggested that single people over 60 (and especially those who have lived in their property for over 30 years) are most likely to have poor housing. Their definition of “poor” was housing unfit for human inhabitation, in substantial disrepair, or in need of essential modernisation. Elderly people are also more likely to live in houses that are energy inefficient. This, combined with relatively low incomes, means that the average elderly person needs to spend a larger proportion of his/her income on heating to stay warm when compared with the working population. Unfortunately, many elderly people do not spend enough to keep warm, presumably for fear of getting into debt. This may be one explanation of why the excess number of winter deaths in the UK is high compared with other European countries.

Some facts about the housing of pensioners in Britain:

- 2% live in nursing homes
- 3% live in residential homes
- 5% live in sheltered housing
- 21% of over-85s live in institutional care
- 39% of elderly people live alone
- 58% of homeowners who have paid off their mortgage are over 65 years
- To keep warm, the average pensioner needs to spend 18% of income on heating
- The average amount actually spent by pensioners on heating is about 10%

Circumstances often arise where houses people live in for many years become unsuitable for their needs because, for example, of increasing disability. There are statutory grants available to help with the cost of adaptations in the home but there are often long delays before people receive them. For those who decide to move from their home, finding suitable alternatives can be difficult. There is a lack of suitable housing, and—especially for owner-occupiers—access to local authority or housing association accommodation may be restricted.

There is a relatively small proportion of the elderly population in residential or nursing homes, although the older one becomes, the more likely one is to move into such an institution. This is

because few will even consider a move to residential care. They believe it will lead to a decline in their quality of life and that these places are simply a place for them to die. Carers may also resist the idea of a move, seeing it as failure on their part. Two-thirds of admissions to residential care follow a hospital admission or occur after living with someone else. Often considerable pressure is placed upon older people in order to persuade them to move into care.

## ELDER ABUSE

The abuse of elderly people is not a new phenomenon, but was first described in the medical literature in the mid-1970s, when the term ‘granny battering’ was used. Despite over twenty years of awareness, the issue of elder abuse has been relatively ignored when compared with other forms of abuse, such as violence against women or child abuse.

It is a complex issue, and the term elder abuse encompasses physical, psychological, and financial mistreatment of elderly people in addition to passive and active neglect.

Although the prevalence is impossible to quantify accurately because of problems of definition and reliability of information, community studies from both sides of the Atlantic suggest a prevalence of all types of abuse of around 3–5% of all elderly people. Physical abuse accounts for about half of this. These are probably underestimates.

Several characteristics of victims of elder abuse and the perpetrators have been identified (Table 2). Most elder abuse occurs at home, as few elderly people live in institutional care. When abuse does occur in care homes, however, the results can be disastrous, as the abuse can become institutionalised and endemic. Such abuse has been the cause of many scandals. The so-called carers who perpetrated these crimes were able to continually abuse their charges because of poor management (or collusion of management) within the institution, poor training and morale of the workforce, inadequate resources to provide quality care and a low index of suspicion by outsiders. In spite of repeated inquiries, lessons do not seem to have been learnt and institutional scandals continue to occur with shocking regularity.

**Table 2.** Characteristics of elder abuse victims and abusers.

Characteristics of victims	Characteristics of abusers
Women	The victim’s son or spouse
Physically dependent	Psychiatric ill health
Living with their abuser	Alcohol abuser
	Unrealistic expectations of victim’s abilities
	Dependent financially on the victim

## ETHNIC ELDERS

In the UK, one of the major social changes in the late twentieth century was large-scale immigration, mainly from Commonwealth countries. About 6% of the population are now from the ethnic minorities. There are proportionately fewer elderly people from these groups compared to the indigenous population, so ethnic elders make up about 2% of the total elderly population. This is likely to rise as the cohort of young immigrants graduate into retirement age. Nearly three-quarters of the ethnic minority population in the UK live in Greater London, West Yorkshire, Greater Manchester and the West Midlands.

The elderly people from these ethnic groups are disadvantaged in several ways. First, they are more likely to be living in poverty than white elders are. Secondly, they tend to have more chronic ill health than their white contemporaries, and thirdly, they are less likely to have access to appropriate health and social services.

Hospitalisation can be an unpleasant experience for anyone, but it can be especially difficult if the hospital routine is not understood, the food is unsuitable, and language barriers prevent proper communication. Members of ethnic minorities in hospital frequently encounter these problems. The concept of rehabilitation is also a difficult one for some ethnic elders to grasp, particularly where the traditional illness behaviour is to take to one’s bed and wait to either recover or die. Careful explanations to both the patient and his/her family about the principles of modern-day geriatric rehabilitation are needed to ensure the patient’s understanding and co-operation.

**RECOMMENDED READING**

Age Concern policy papers. Age Concern England regularly produces policy documents about current issues concerning older people. These are easy to read, up to date and very relevant.

Victor, C.R. (1994) *Old Age in Modern Society*, Chapman & Hall. This is a good general text covering the major areas of social gerontology.

Office for National Statistics (1999) *Population Trends 1999*, The Stationery Office.

The Department of Environment, Transport and the Regions (1998) *English House Condition Survey 1996*. The Stationery Office.

**SELF-ASSESSMENT QUESTIONS**

*True or false?*

1. With regard to retired people in the UK:
  - a) They are more religious than younger people
  - b) They spend more time on computers than younger age groups
  - c) They hardly ever do voluntary work
  - d) They are invariably good at dominoes
  
2. In the UK, elderly women
  - a) Have always had a longer life expectancy than men
  - b) Are more likely to live alone than elderly men
  - c) Account for three-quarters of the over-75s
  - d) Drink over half of the total volume of sherry consumed in Britain each year



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# 3. Clinical ageing

Gurcharan S. Rai and Graham P. Mulley

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*It ought to be lovely to be old  
To be full of peace that comes of experience  
And wrinkled ripe fulfilment*

*The wrinkled smile of completeness that  
follows a life  
Lived undaunted and unsoured with accepted  
lies.  
If people lived without accepting lies  
They would ripen like apples, and be scented  
like pippins  
In their old age*  
D.H. Lawrence (*Beautiful Old Age*)

## CLINICAL PRESENTATION OF ILLNESS IN OLD AGE

An assessment of an ill young person should lead to a unifying single diagnosis. While such an approach can also be true for older people, some sick old people differ in their presenting features from younger persons. What are these differences? A helpful mnemonic is 'NAMES':

- Non-specific presentation
- Atypical or uncommon presentation
- Multiple pathologies or diagnoses
- Erroneous attribution of symptoms to old age
- Single pathology/illness can lead to catastrophic consequences

## NON-SPECIFIC PRESENTATION

The first President of the British Geriatrics Society, Dr Trevor Howell, described five great problems

often encountered in aged patients. These 'dragons' usually carried a poor prognosis and made caring for older people arduous. They were:

- Confusion
- Incontinence
- Contractures of joints
- Bedsores and other ulcers
- Falls

Bernard Issacs continued the mythological theme by describing the 'Giants of Geriatric Medicine' (falls, immobility, confusion and incontinence) and recently geriatricians have tried to describe the pattern of presentation into an *aide-mémoire* using the letter 'I' (incontinence, instability i.e. unsteadiness leading to falls, immobility, intellectual failure and iatrogenic illness). These may be the only presenting features of illness. With such non-specific presentation differential diagnosis is broad and the doctor has to use all available information from the history (which may have to be sought from a third party), carry out a full examination and appropriate investigations to find the cause of vague symptoms. A physician looking after an elderly patient not only requires medical knowledge but also observational, listening and deductive skills.

### 5 'I's

- Incontinence
- Instability
- Immobility
- Intellectual failure
- Iatrogenic disease (which can cause any of the above non-specific symptoms)



## ATYPICAL OR UNCOMMON PRESENTATION

Atypical or uncommon symptoms may replace the commonly stated features of illness listed in textbooks. Myocardial infarction may present with shortness of breath or a fall resulting from a cardiac arrhythmia or hypotension. Pneumonia or other serious infections may not give rise to a temperature or a rise in white cell count in an older person. Peptic ulcer perforation in an older person can be asymptomatic and the diagnosis may be made by examination of the chest X-ray.

## MULTIPLE PATHOLOGIES

With ageing there is an increasing tendency for many pathologies. The main factors which contribute to the development of multiple diseases include:

1. An age-related increase in incidence of common disorders, e.g. hypertension, osteoarthritis, diabetes mellitus, vascular disease, dementia.
2. Disturbance of immune system, leading to increased chances of cancer and hypothyroidism.
3. Increased likelihood of an illness affecting one system leading to disorder in another, e.g. respiratory infection leading to development of atrial fibrillation and heart failure.
4. Vascular diseases may develop gradually and during the latent period acute process may be superimposed at any time.
5. Immobility associated with many neurological or musculoskeletal disorders may lead to an increased risk of developing complications such as falls, urinary incontinence, infections, pressure sores, deep vein thrombosis and pulmonary embolism.

## ERRONEOUS ATTRIBUTION OF SYMPTOMS IN OLD AGE

Not only doctors but elderly people themselves may mistakenly attribute non-specific signs and symptoms to old age. An elderly person may say 'it is my age, doctor' or 'I am only here because my daughter is worried'. The doctor may find one or more underlying causes for the symptoms.

## SINGLE ILLNESS/PATHOLOGY LEADING TO CATASTROPHIC CONSEQUENCES

While a simple illness (such as an influenza) may produce symptoms that last for few days in a young person, in some older people it can lead to a cascade of events that can have dire consequences (see Figure 1).

A pathological process does not just lead to abnormality of one or more organs of the body but has consequences for the individual as a whole leading to physical, psychological, functional and social problems. The WHO published the International Classification of Impairments, Disabilities and Handicaps (ICIDH) and defined:

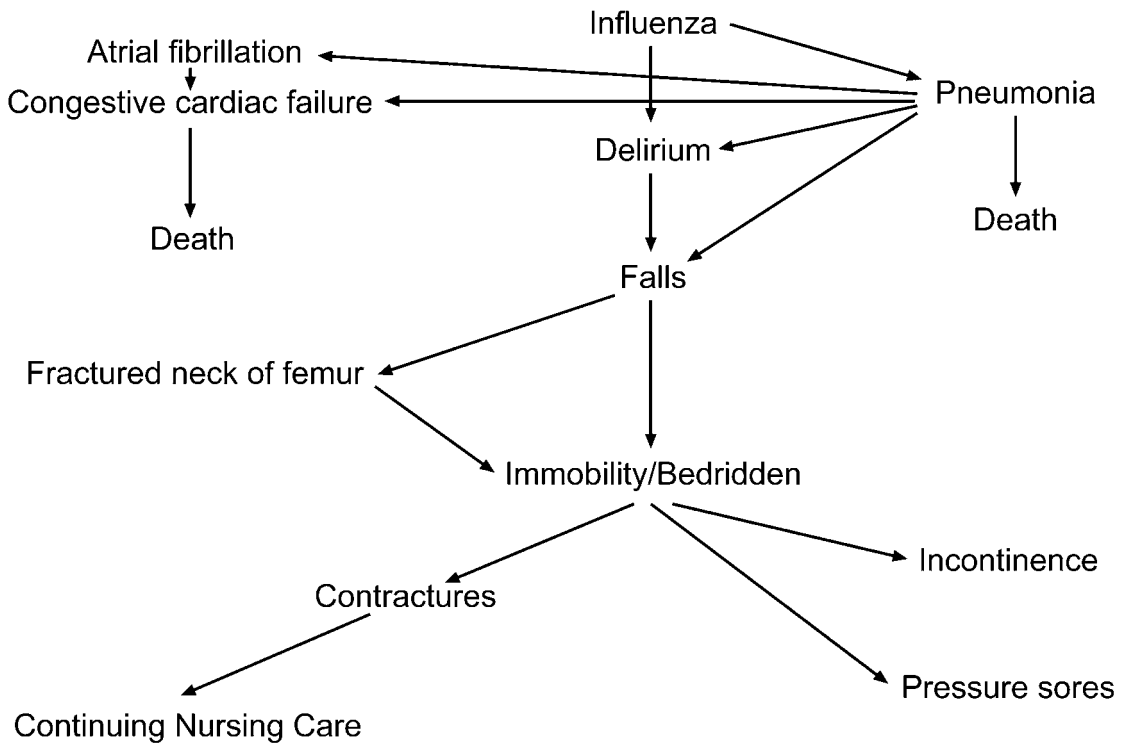
*Impairment* as any loss of abnormality of psychological, physiological, or anatomical structure or function (for example, shortness of breath or weakness in a limb),

*Disability* as any restriction or lack of ability to perform a task or activity within the range considered normal activity (e.g. walking, dressing),

*Handicap* as the social disadvantage suffered by an individual as a result of ill-health compared with what is normal for someone of same age, sex and background.

Therefore, disability is about activity, handicap involves participations. While definitions can differentiate between symptoms, impairments, disabilities and handicaps, in reality they are intrinsically linked. The effect of an intervention to influence one will affect the others (an exception being some handicaps, which may be altered by an intervention without disability or impairment being affected, e.g. provision of a stairlift for someone who has difficulty climbing stairs because of osteoarthritis of hip. Such an action will not improve symptom of pain and neither will it improve mobility on the flat surface).

Complex disability in relation to impairment and handicap requires full and thorough assessments of an individual not only from a physician but from other professionals. Roles of these professionals are to develop and implement rehabilitation in order to achieve maximum recovery and function with decline in handicap, disability and impairment. If handicap or disability cannot be abolished then the team's role should be to ensure that an individual is able to live as independent a life as possible with support of individuals or aids and adaptations and services that meet his/her needs (see chapter on



**Figure 1.** Potential result of influenza in elderly people.

rehabilitation). In attempting to meet the physical and psychological needs of an individual, it is important to remember that professionals' actions should:

1. Reduce individual's distress
2. Improve his/her wellbeing
3. Improve his or her quality of life (people themselves are the best judges of an outcome of 'life worth living').

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### SELF-ASSESSMENT QUESTIONS

*True or false?*

1. 'Giants of Geriatric Medicine' include
  - a. 'Social' problems
  - b. Instability
  - c. Multiple pathologies
  - d. Lack of pyrexia in pneumonia
2. An elderly person with thrombosis of left middle cerebral artery may have the following handicap:
  - a. Weakness of right arm
  - b. Weakness of right leg
  - c. Dysphasia
  - d. Inability to write letters



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# 4. Developing and planning services

**Douglas G. MacMahon and Mark Battle**

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## **INTRODUCTION**

High-quality services for older people need to be planned. Developing these services requires a detailed knowledge of many aspects of health and social care, and an appreciation of current national and local political, economic and sociological factors, and a prediction of how they may be likely to change. This needs to be related to local factors such as geography, transport and culture and compared to existing resources, and their uses. In this chapter we discuss the demographics of the older population, review the range of services used to deliver care to older people, and discuss how these services may change. (See also the chapters on rehabilitation by Young and preparing for a consultant post by Patterson and Brown.)

## **REFLECTIONS ON THE EVIDENCE BASE AND IMPLICATIONS FOR GOVERNANCE**

Clinical governance will emphasise the use of interventions proven to improve patient outcome in the most cost-effective manner. Many older patients do not present with a single diagnosis. They therefore differ from the patients included in most clinical trials on which evidence rests. Many will have multi-system disease. Often their social circumstances are precarious, and may be as important in considering discharge plans as their medical conditions. It may be difficult to show benefits from some components of multi-disciplinary interventions. This will have implications for older patients when commissioners of services (Primary Care Groups, Trusts, and Health Authorities) are allocating scarce funds and demanding evidence. Throughout this chapter, key points are accompanied by some of the potential

questions on governance. Readers are invited not only to consider how these issues impinge on their current practice, but also to reflect on their own practice.

## **CHANGING ATTITUDES AND PATIENT INVOLVEMENT**

When patients and clinicians work together to make important decisions and plan further care, there is improvement in patient satisfaction. The importance of full patient partnership in chronic disease management is now being increasingly recognised.<sup>1</sup> Although this may lead to an increased demand on educational resources, it may help patients to manage their own therapy and so attend specialist clinics less often; this has implications for service provision. The move has been described as the transition from Industrial age medicine to Information age health care. Professionals will have to change their attitudes, to become facilitators and partners rather than authoritarian figures, and will contribute to the development of self-help networks and individual self-care. Innovations will include ‘expert patients’ and access to information via the internet.

## **DEMOGRAPHICS AND THE CHANGING ENVIRONMENT—THE NEED FOR SERVICES**

The number of older people will continue to rise for the next 50 years. Within the overall rise, the number of very elderly people (over 85 years) show the greatest increase (almost tripling) whereas the increase in younger cohorts is more modest. However, the overall population under 65 is

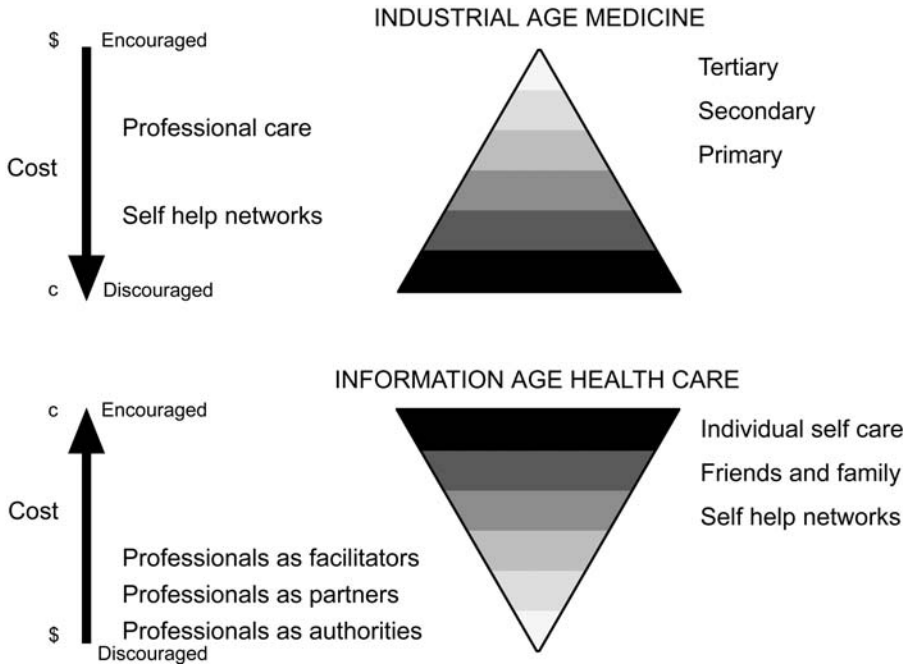


Figure 1.

predicted to remain constant, shifting the balance between young and old, and one can only speculate on the political and sociological impact of this change. The financial implications are easier to predict (assuming no major shift of policy on retirement age). Thus, one can anticipate an increased dependency ratio — with relatively fewer people earning money compared to those who are supported, be they retired or children.

The demographic picture varies between localities, and so the overall figures need to be interpreted cautiously. Local census data can be used to augment predictions which otherwise could be misleading.

The increasing life expectancy seen in most countries is often portrayed as a problem. However, in many ways it should be considered a marker of the success of strategies which have made an impact on the whole population. It is a fallacy to claim a simple relationship with better medical care in old age. Rather, the increased life expectancy is mainly related to improved sanitation, better housing, preventative health measures (particularly immunisation against common childhood killers, but also treatment of hypertension and reduction of

smoking), and greater wealth. High-profile advances in medical management have made only minor contributions.

The concept of disability-free life expectancy has service implications. Any measure that extends the time spent living with disability will lead to increased demand on services. Thus, reduced mortality from stroke, for example, may paradoxically increase service demands for rehabilitation and longer-term care.

The decline of the extended family could lead to a relative lack of carers, so that more formal

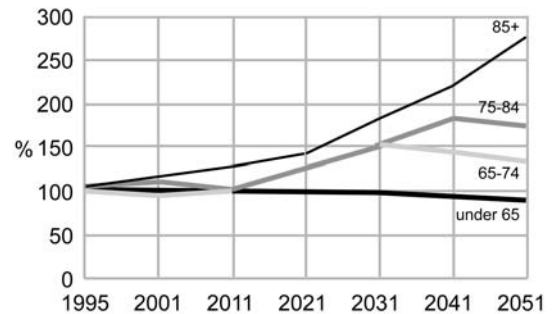


Figure 2. UK population projections. Indexed on 1995 (Royal Commission 1999).

services may be required to replace those that previous generations would have had provided from within the family. When taken in conjunction with a massively increased dependency ratio, the implications for rationing resources (or increasing of taxes) are considerable.

In some cases, voluntary organisations provide support and practical services to older people. In most, there is a balance between statutory and private sector providers. Old people usually gain access to them through a case (or care) management system based upon an assessment from social services coordinators.

Changes in professional issues also dictate changed staffing and service delivery. For example, the need for CT scanning and swallowing assessments after stroke prompts the requirement for access to a scanner (possibly with transport implications) and increases demands for speech and language therapists. Clinical governance will insist that services have to meet criteria, which will be rigorously audited. This may challenge the evidence base, and should stimulate basic research into many of the areas of practice that have never before been scrutinised.

## **GEOGRAPHICAL CONSIDERATIONS**

The more frequent the requirement for services, the longer patients are in hospital, and the less technologically dependent they are, the more local should be that service. It is as unreasonable to expect disabled patients to travel for several hours for outpatient rehabilitation in a day hospital as it is to provide skilled and resourced neurosurgical units in every village. Consequently, the availability and provision of transport must also be considered in the planning of a district-wide service.

## **THE NEEDS OF OLDER PATIENTS**

Older patients do have some differing needs from younger ones, but not just as a function of age. Whilst many diseases present in a characteristic fashion, unusual presentations and multiple disabilities are commoner with advancing age. In addition, side effects of medication become increasingly common. Chronological age *per se* is a poor proxy for biological age. Ageism cannot be

condoned in any area of medical care. A key test is to ask whether all ages are included in, or excluded from, treatments or investigations, and, if designed specifically for elderly people, whether specialist clinicians with experience in geriatric practice (medical, nursing, and therapy staff) are involved.

## **THE ROLE OF COMPREHENSIVE GERIATRIC ASSESSMENT**

All units should be capable of organising a full assessment, with components drawn from medical, functional (physical and mental), social and, when necessary, financial aspects.

There is now evidence for the efficacy and importance of comprehensive geriatric assessment (CGA) in geriatric medicine and extensive support for its extension into longer-term management (geriatric evaluation and management—GEM). There has been controversy over the value of CGA. Regrettably, there is little published evidence from the UK. We have therefore to rely on evidence from the United States. The best evidence is from the meta-analysis performed by Stuck that included 28 controlled trials comprising 4959 subjects allocated to one of five CGA types and 4912 controls. Multivariate logistic regression showed unequivocal value in inpatient geriatric evaluation and management units.

## **KEY POINTS**

- The number of very old people is increasing.
- Elderly patients occupy two-thirds of hospital beds.
- Increasing survival may lead to greater demand for services.
- Decline of the extended family increases the demand on services.
- Comprehensive geriatric assessment (CGA) and geriatric evaluation and management (GEM) are central to delivering effective healthcare.

## **GOVERNANCE ISSUES**

- It is essential to ensure that the older population have equal access to all areas of service. How can one assess equity of access?

- Transport services must be adequate in supply, adapted for disabled people and flexible. How can one test this?
- Increased demand must not lead to decreased quality. How is this ensured?
- Ageism cannot be tolerated. Can one demonstrate that this is observed?

## MODELS OF SERVICE

Health services are traditionally divided into primary, secondary, and tertiary care. A comprehensive service must provide facilities to cater for a variety of scenarios. Most patients requiring intensive care or high technology will be cared for in tertiary care. Since this differs little from the same services for younger patients, no further consideration shall be given to these areas in this chapter.

Most medical emergencies are handled in secondary care, and various models and configurations have emerged both for acute intake and between acute and rehabilitation wards.

Each has separate implications for the specialty of geriatric medicine, even though acute admissions are only one part of the system of care required to support elderly people in a community. Arguably, chronic disease management is at least as important, if not more so, than the tip of the iceberg that acute admissions represent.

### Acute Intake

Three main service patterns describe the division of the acute medical intake between geriatric medicine and general medicine:

- Integrated —with all medical inpatient wards for adults of all ages
- Age related —with a threshold (typically of 65, 75, or 80 years)
- Needs led —for older adults with complex multi-system diseases, when some rehabilitation may be needed, or when a difficult discharge is anticipated

### *Advantages and disadvantages of integration*

There is much evidence against the separation of

acute facilities on different sites, which led to the exclusion of elderly people from diagnostic and therapeutic techniques in the early years of the NHS. There is no defence in denying any person of whatever age access to a suitable and properly staffed medical ward if their illness warrants acute admission. Within that unit, there are arguments in favour of separating the extremes of presentation, e.g. coronary care units for patients with acute myocardial infarction, overnight-stay wards for deliberate self-harm. There are less persuasive arguments concerning the more common presentation of many elderly patients, some of whom may require intensive investigation and treatment, others needing less intense, but more protracted rehabilitation. Length of stay tends to increase with age, partly because of the difficulties in managing complex concurrent conditions but also because of the time required for rehabilitation, and to organise effective discharge.

Whether all older patients should share facilities with their younger counterparts is more contentious. Most hospitals will provide some specialised elderly care beds, where the geriatric team cares for those patients. As the National Beds Inquiry (2000) showed, people aged 65 and over occupy a disproportionate number of beds—almost two-thirds of the total.<sup>2</sup> They also are an important group in the rising number of emergency admissions. Unless a hospital dedicates a similar proportion of its wards to acute geriatric medicine, many elderly patients will be cared for in general medical or other medical sub-speciality wards. This can be advantageous if this is an appropriate speciality, but can lead to misplacement, delaying assessment and discharge planning.<sup>3</sup>

### Rehabilitation

There is debate about the value of combining acute with rehabilitation, or keeping them separate and distinct. The argument is not quite as polarised as may appear, and in practice most wards will fulfil a mixture of roles. However, the argument in favour of combining these functions is largely based on efficiency, and the introduction of rehabilitation early in the inpatient episode. The arguments against are the incapacity of a rehabilitation culture to cope with the increasingly more technical acute end of the spectrum of disease, and the squeezing

out of rehabilitation from the acute environment (i.e. the urgent taking precedence over the important). Both models can be made to work, but certain conditions need to be satisfied.

**Acute environments** need:

- Access to diagnostic and therapeutic facilities (radiology, imaging, biochemistry, haematology, radiotherapy, etc.)
- Staffing—mainly medical and nursing—trained in acute (but also aware of rehabilitation techniques)
- Therapy staff to address acute needs (early intervention, e.g. stroke positioning, chest physiotherapy)
- Support from high dependency and/or intensive care unit

**Rehabilitation facilities** need to be appropriately planned and built for accessibility for disabled people. This implies:

- Level access to therapy areas (within/or adjacent to ward) space
- An environment conducive to therapy
- Quiet areas for rest between therapy sessions
- Provision of sufficient numbers of staff trained in rehabilitative techniques

Both need adequate resourcing so that patients can receive high quality care when they most need it and wherever they are cared for.

## MODELS OF SERVICE

### Key Points

- There are a variety of models for service provision.
- Acute and rehabilitation patients have differing needs in terms of environment, equipment and staffing.
- Adequate resources must be available for all stages of patient care.

### Governance

- There must be equitable access to high dependency care, diagnostic and therapeutic facilities,

and rehabilitation for patients of all ages. How can one test this?

- Pressure on beds, or other resources, must not lead to inappropriate early discharge. Can audit assist in the assessment of this?
- Patients should be treated in the environment most suited to their individual needs. Can one involve patients in the audit of the environment?

## COMMUNITY SERVICES

There are many ways in which older people may gain access to diagnostic, therapeutic and rehabilitation facilities. Each has its own virtues, and none has a universally agreed service, being at least partly dependent on local staffing, preferences, personalities and the deployment of resources.

### Relationships with Primary Care

General practitioners have a central role in the co-ordination of health care. All patients have access to a general practitioner, working with the primary care team. Differing arrangements have been devised to handle the provision of out-of-hours emergency calls, most commonly some form of co-operative. However, all GPs are responsible for the handling of many common, chronic diseases. With appropriate training and effective teamwork, primary care teams could perhaps manage complex chronic illnesses intensively, although many are currently managed by specialists. General practitioners also have a role in commissioning services through Primary Care Groups and Trusts.

The delivery of care by a coordinated team of individuals has been assumed by many geriatricians to be a 'good thing', even though there is little objective evidence. In the past decade, intervention studies have begun to show advantages to chronically ill patients of care by a team, within protocols designed to make best use of the team's roles and functions. These have consistently been associated with better outcomes. The involvement of trained nurses or other staff can complement the doctor in certain care functions such as assessment, treatment, management, and follow-up. This not only improves adherence to guidelines, but also frees up the doctors for duties that only they have



the requisite skills and training to fulfil. The participation of medical specialists in consultative and educational roles outside conventional referrals may also be beneficial. Sharing care between primary and secondary care therefore has important advantages, and specialist nurses or health visitors can help facilitate these arrangements.

## INTERMEDIATE CARE

The term ‘Intermediate Care’ is an imprecise term that has been used to describe many different services, including post-acute care, low dependency care, and elements of recuperation, rehabilitation, and sometimes plain procrastination. The involvement of geriatricians and elderly care teams is very varied in these schemes.

The most important areas for geriatricians to consider is the medical assessment, medical care, and clinical standards applied to the patients, which should be relevant whatever models are used locally.

The British Geriatrics Society (BGS) argues that elderly people should not be denied access to appropriate inpatient diagnostic or therapeutic facilities (which are generally only available in secondary care hospitals), nor should they remain in hospital longer than they need.

The King’s Fund definition of ‘Intermediate Care’ is:

*‘That range of services designed to facilitate transition from hospital to home, and from medical dependence to functional independence, where the objectives of care are not primarily medical, the patients’ discharge destination is anticipated, and a clinical outcome of recovery (or restoration of health) is desired.’*

A basic tenet is the lack of need for district general hospital (DGH) facilities. There is an assumption that intermediate care is not medically led, but no clear explanation of how patients’ medical needs (nor explicitly of other needs) will be met. This is an important subject, particularly if hospital diversion is involved (keeping old people out of hospital). More NHS activity is being done in fewer hospital beds. Vetter concluded, by extrapolating from current trends, that the last

hospital bed will close in 2016, and in that year would have had an excess of 12 million patients through it.

However, the National Beds Inquiry strongly supports this development, and it is likely that this area of activity will be increasingly attractive to purchasers to compensate for dwindling bed numbers, and provide a challenge to providers of primary and secondary care. The challenge is to prevent Community Care becoming Community Neglect.

### Where is it Performed?

Venues include:

- Community hospitals
- Hospital-at-home schemes
- Community assessment and rehabilitation schemes (CARTs)
- Social rehabilitation schemes
- Nursing homes
- Hospital hotels
- Nurse-led units and nurse development units
- ‘Epics’ schemes based on the ‘On-Lok’ and ‘Pace’ concepts

### Who Does What in Intermediate Care?

The staffing needs are unclear and vary enormously. By assumption, it is probably a function of a mixture of nurses, social services’ staff, therapists, and general practitioners. Whilst generic unskilled support is important, skilled supervision must be maintained. We would suggest that any staff offering treatment and supervision should possess relevant qualifications and experience of managing elderly patients. In addition, they should participate in training, education, and audit to maintain their expertise. Intermediate care is beyond the normal scope of primary care teams.

### For Whom?

This comes down to two main choices: a generic approach, or one which is focused in three domains—diagnosis, age, and location. Some hospital-at-

home schemes have focused on a single condition (fractured neck of femur in Peterborough) but later widened to include a range of conditions. Others have started with a generic brief, not only in terms of conditions, but also ages and venues (home, residential and nursing homes etc. (e.g. CARTs)). Similarly, some have been designed to accommodate convalescent post-surgical patients, but then widened to include direct community referrals (e.g. social rehabilitation schemes).

Selection for some schemes is by a doctor (GP or specialist), some by a nurse or other clinician, and others admit directly from the community. The BGS is concerned that elderly people frequently present with non-specific symptoms when the underlying medical problem may need full investigation and treatment. In general, admission direct from home would appear to be more hazardous than from a hospital, but both require a full medical assessment, by a doctor with experience of elderly care, and supported with diagnostic investigative facilities as part of CGA.

### **Medical Assessment, Medical Care and Clinical Standards**

In conventional medical care, the medical responsibility lies with the consultant, who may delegate to junior medical staff or to general practitioners employed by a Trust as clinical assistants or hospital practitioners. In the community, most of these functions are performed by general practitioners under their General Medical Services contract. The boundaries are blurred in Intermediate Care. Deficiencies could lead to inadequate assessment, failure to reach a diagnosis, improper or inadequate treatment, communication errors, neglect, and potential liability of both doctors and employers. In the context of governance, medical arrangements should be explicit and monitored to ensure compliance.

### **Other Points**

Issues to be considered when reviewing Intermediate Care schemes, and particularly when considering them alongside conventional geriatric services, include:

- The need for the service in the context of other local service components
- Clinical governance
- Medical and professional responsibility—who, how, and for what?
- Liability—who offers vicarious liability, and undertakes to cover this?
- Training—what will be given, to whom, at commencement and thereafter?
- Risk assessment—and responsibility for maintenance of clinical standards?
- Relationship with geriatric medicine and other hospital services (e.g. psychiatry of old age) and primary care?
- Re-admission arrangements?
- Medical assessment, re-assessment, and arrangements for ongoing care
- Which staff are involved, staffing levels, and skill-mix
- Opportunity costs, and cost shifting between NHS, social services, individuals or families
- Sources of longer-term funding
- Contractual incentives and disincentives

## **COMMUNITY SERVICES AND INTERMEDIATE CARE**

### **Key Points**

- Community and intermediate care services vary, depending on local resources and staffing, with no models being obviously better.
- These services may be an important growth area as pressures on beds increase.
- They involve specialists for the elderly as well as general practitioners, potentially making responsibilities unclear.
- They may facilitate early discharge from secondary care.

### **Governance Issues**

- Patients in intermediate care should not be denied access to appropriate inpatient facilities. How can quality of care be demonstrated?
- The use of intermediate care services should not facilitate inappropriate early discharge. What is an appropriate length of stay?

- Regular audit should be undertaken to ensure quality of service, value for money, and maintenance of expertise. What standards should be adopted?

The BGS policy paper on this subject contains a check list against which to judge the value of such Intermediate Care schemes.

## Day Hospitals

Day hospitals may fulfil a variety of roles and provide many services, depending on local needs; there are no national guidelines on their use.

Possible roles include:

1. Continuing rehabilitation following hospital discharge
2. Interdisciplinary assessment and rehabilitation for outpatients, which may often prevent or postpone admission
3. Regular outpatient review for patients with potentially unstable conditions
4. Other multidisciplinary clinics (e.g. amputee (prosthetics), wheelchair, continence assessment, memory)
5. Patient education/health promotion/disease prevention
6. Social support for patients (occasional respite care)
7. Forum for comprehensive geriatric assessment

Day hospitals fulfilling so many roles will require a great deal of flexibility, and must be equipped to deal with different levels of dependence in the patients. Correct staff mix is vital, including a core staff of physiotherapists, occupational therapists, nurses and doctors, and easy access to psychologists, speech and language therapists, continence advisors, chiropodists, social services, and other specialist services.

Transport of patients to and from the day hospital is important: patients have to be delivered with enough time for optimum rehabilitation without being exhausted from an arduous journey and suffering from travel sickness.

Goal setting and regular review are an essential part of day hospital rehabilitation. Goals should be achievable and agreed by the patient and the team. Once a patient has achieved their full potential, whether goals have been achieved or not, then

discharge must be considered to make way for more patients.

The day hospital can be gruelling for some patients, involving several assessments and therapies, so it is important to include inactive time for rest, recuperation and social contact. Similarly, some patients may not wish to attend for a whole day, and so their needs should also be accommodated by a flexible schedule.

## DISCHARGE PLANNING

Successful discharge planning is a cornerstone of a geriatric service, and can prevent many re-admissions.

It is essential to involve the whole interdisciplinary team, as each member has valuable insights into the patient's abilities and weaknesses, as well as the home circumstances; advice from social services and general practitioners can be invaluable at an early stage. The wishes and views of patients and carers are of paramount importance to the discharge process.

Following initial assessment, it is important to discuss all aspects of the discharge and decide on the possible timing and venue for discharge. Rehabilitation, convalescence, or placement may need to be considered.

The doctors have responsibility for optimising health and preventing foreseeable health problems by stabilising and simplifying treatments, facilitating drug taking and monitoring in conjunction with pharmacists, carers and GPs, and by organising follow-up.

Nurses need to identify and assess problems with the activities of daily living, and call in help from other professionals to aid with rehabilitation, or to identify the help needed following discharge. Speech and language therapists, dieticians, continence advisors, specialist nurses, psychiatrists and other health professionals may all need to be involved at this stage.

The main role of the physiotherapist is to assess and facilitate safe mobility and transfers. The ability to transfer safely with appropriate help is often the limiting factor that prevents discharge to the patient's own home.

Occupational therapists identify problems with other aspects of daily living. A home visit is often useful, as problems identified in hospital may not

be as important at home due to a patient's in-built coping strategies. Problems not identified in hospital may become apparent on the visit home.

Social services have responsibility for providing packages of care, or funding for placement, or help for the carers.

Support after discharge may be needed for both patient and carers. Local facilities including day hospitals, day centres, out-reach and community rehabilitation schemes, Red Cross services and other charities, as well as respite care may all be helpful.

One member of the team should be identified as the person coordinating all of these aspects of the discharge. Good communication within the team and with patients and carers ensures that potential problems can be identified and sorted out early, and that goals are clear, agreed and achievable.

Communication with GPs is also vital in the case of complicated discharges, as they are usually the first port of call should problems arise, and can often prevent readmission if they have been adequately informed.

### Key Points

- Good communication within the team is an essential part of discharge planning.
- Poor assessments can lead to unsuccessful discharges.
- Knowledge of local community services to facilitate discharge is invaluable.
- Appropriate follow-up can prevent re-admission.

### Governance

- Audit can help identify and prevent the “revolving door” syndrome.
- Inappropriate discharges due to pressure on resources must be resisted
- Early communication with the general practitioner is vital.

## LONG-TERM CARE—NURSING HOME MEDICINE

Nursing homes are now the venue for most long-term care. Most are managed by the private or not-for-profit sectors, although the NHS provides a

few long-term beds for selected cases. Each District will have jointly agreed ‘Eligibility Criteria’ but there is much variation between the provision across the country.

Typically, each nursing home will have medical cover provided by general practitioners, and some will have links with a department of geriatric medicine. All nursing homes are inspected either by the registration department of their district health authority, or a joint inspection unit with social services.

Certain minimum standards are agreed in terms of layout and staffing levels. Readers are encouraged to visit local homes to gain their own impressions on issues such as:

- Arrangements for multidisciplinary assessment for long-term care (particularly medical assessment)
- Contrasting nursing home facilities and care with those in residential homes
- Contrasting elderly mentally infirm (EMI) care with conventional homes for frail elderly
- Who pays and who is responsible?
- Roles of the NHS versus Social services
- The provision of respite care and social day care to support elderly people and carers
- The role of the geriatrician as a gatekeeper. Have geriatricians an ongoing role in the management of residents?

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*With Respect to Old Age: Long Term Care – Rights and Responsibilities.* A Report by The Royal Commission on Long Term Care, HMSO, London, 1999.

Readers should refer to relevant Policy Statements in the BGS Compendium (<http://www.bgs.org.uk>), e.g.:

- A1 BGS Aims and Functions
- A2 NHS Medical Services for Older People— Advice to Commissioners and Providers
- A3 Standards of Medical Care for Older People—Expectations and Recommendations
- A4 Rehabilitation of Older People
- A5 Model Workload for Consultants in Geriatric Medicine
- C1 Acute Medical Care for Elderly People
- C3 Guidelines for Collaboration between Physicians of Geriatric Medicine and Psychiatrists of Old Age

D1 Seamless Care—Obstacles and Solutions

D2 The Discharge of Elderly Persons from Hospital for Community Care,

E2 The Work of the Geriatrician in the Community

## QUESTIONS FOR THE CONSULTANT INTERVIEW

1. How would you change service provision in this trust to provide better value for money and improved patient care?
2. How will the introduction of clinical governance influence your practice?
3. How will you ensure that services for older people receive adequate funding from your local primary care group (PCG)?

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# 5. Community geriatric care

**Branwell Spencer**

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## COMMUNITY GERIATRICS: WHAT IS IT?

All geriatricians have a role in community care, even if it is limited to domiciliary visits, day hospital and outpatient clinics. A definition of the “community” should include all the residences of older people—ranging from their own home to residential and nursing homes.

Unfortunately, with the increasing emphasis on acute hospital work and the simultaneous decrease in NHS long-stay beds, geriatricians have been in danger of becoming removed from those areas of care on which the specialty was founded. General practitioners often have not had the formal training in geriatric medical care to allow them to undertake this role.

**Geriatricians should therefore maintain and develop services for older people in the community.**

## COMMUNITY PROVISION: WHO DOES WHAT?

### Social Services Provision

Social workers act as gatekeepers to the system. Some of the areas for which they are responsible include:

1. Assessment of need for independent or social services residential or nursing home
2. Review of financial ability to pay for care in long-stay facilities
3. Housing adaptations
4. Equipment for daily living
5. Home care
6. Day centres
7. Respite care in residential and nursing homes

### Health Authority Provision

1. Nursing
2. Palliative care
3. Macmillan nurses
4. Continence advisory services
5. Physiotherapy
6. Occupational therapy
7. Chiropody
8. Dental care
9. Dietetics
10. Opticians
11. Community pharmacists

### Voluntary Services

The voluntary sector is coordinated by two main organisations: The Council for Voluntary Services and the National Council for Voluntary Organisations. Voluntary organisations include:

1. National general organisations (e.g. Age Concern and Help the Aged)
2. Disease- or disability-specific organisations (e.g. Arthritis Council, Parkinson’s Disease Society, Alzheimer’s Disease Society)
3. Organisations for carers (Crossroads, Carers National Association)
4. Locally orientated organisations (Citizen Advice Bureau, Women’s Royal Voluntary Service)
5. Culturally-based organisations
6. Hospices
7. Housing Associations

### Private Organisations

1. Nursing and residential homes

2. Some home-care services
3. Live-in companions
4. Domiciliary nursing services (e.g. nurses who stay overnight at the person's home)

## THE COMMUNITY ROLE OF CONSULTANT GERIATRICIANS

There are three types of consultant geriatrician:

1. 'Thoroughbred' consultant geriatricians with no general medical responsibilities, who are mainly confined to teaching hospitals.
2. Consultant physicians with an interest in geriatric medicine with responsibility for care of general medical and geriatric patients. These doctors may have a specialist interest within geriatric medicine, e.g. stroke, but a minor commitment to community care.
3. The consultant geriatricians with an interest in community geriatrics, who take a lead in community care and develop links between primary and secondary care, whilst maintaining direct access to hospital beds.

The British Geriatrics Society anticipates that each department should have a lead consultant who devotes much time to community work.

## CHANGES IN HOSPITAL AND NURSING HOME CARE

Changes in medical and surgical practice have allowed more people to be treated with shorter inpatient stays or as day cases. From 1990 to 1995, the average length of stay in geriatric wards in the UK fell from 36 to 20 days.

A shorter length of stay after acute admission can make discharge planning difficult. The Audit Commission found that discharge planning after hip fracture was often poorly planned, resulting in inappropriate discharge or failure to provide appropriate rehabilitation.<sup>1</sup>

The year-on-year increase of acute medical admission has led to bed crises, with pressure to return patients home rapidly. Those not discharged home quickly may be prematurely placed on a waiting list for nursing home care, with no chance of returning home if their homes are sold to fund

placement. Since expenditure available to social services for long-term care placement was capped, delays in discharges to care homes are increasing.

## Changing Needs of Residents in Nursing Homes

Although the proportion of over-65s in long-term care remains low (about 5%), the total number of older people in nursing homes is increasing and their increasing frailty requires more nursing staff. Increasingly, there is a need for more technical nursing skills, such as the management of PEG tubes and syringe drivers.

Nurses in nursing homes should have training to enable them to continue caring for their residents.

Whose responsibility is it to provide training for nurses working mainly in the private sector? Private healthcare organisations have often been seen to 'cream the skills' of nurses once they have been trained by the NHS, but the quality of continuing education and training is variable.

## Risks of Hospital Admission to the Most Vulnerable Patient Groups

Advantages of hospital admission include access to specialist medical advice and investigations, specialist nursing skills, and hospital records. However, in some cases, admission to hospital may be inappropriate and the patient might be managed elsewhere. Admission to hospital can have risks and dangers, ranging from injuries to hospital-acquired infections. Some patients admitted to hospital may do less well than if managed in a nursing home<sup>2,3</sup> and they may require few acute care interventions to manage their illness successfully.

## Who Cares for Residents in Long-term Care?

The health needs of an individual should be met by provision of expertise, wherever they live. These are best met with the assistance of geriatricians, whose core skills include the assessment and management of older people with multiple pathology and disability associated with chronic illness. The increased number of nursing home beds and the diminution of NHS long-term beds have reduced the input of consultants in continuing care,

with the major responsibility for planning and provision falling on nurses. General practitioners play an important role in individual patient management, but have little part in guiding service provision.

## **HISTORY OF LONG-TERM AND COMMUNITY GERIATRIC CARE**

In 1983, supplementary benefit was increased to the level where it met the cost of long-term care in nursing and residential homes. This “top-up” of social service payment to pay for long-term care in the UK led to a massive increase in nursing and residential home beds in the independent sector. In England, private nursing home and voluntary sector nursing home beds increased from 18,200 in 1982 to 148,500 in 1994. The number of geriatric beds within the NHS had remained unchanged from 1959 to 1985 (55,600). By 1996, however, there had been a 38% reduction in acute and long-stay hospital beds for older people. The overall number of hospital beds peaked in 1960 at 250,000 and has declined since at 2% per annum. The present number of acute, general and maternity beds totals 147,000.

This increase of publicly-funded private nursing and residential home places came at a huge financial cost. It was the incentive used by the government to change the organisation and funding of long-term care.

There are now about 600,000 people over 65 getting home care from a local authority and about 480,000 older people in care homes, i.e. about 1 in 20 of all elderly people.

## **RELEVANT GOVERNMENTAL PAPERS AND POLICIES ON COMMUNITY CARE**

Papers and policies on changes in health service provision provide political pressure for the expansion of the community role of geriatricians.

### **Community Care Act 1990**

Highly critical reports on long-stay NHS psycho-geriatric wards, combined with an entrepreneurial conservative mindset, encouraged the proliferation of independent nursing and residential homes in the

early 1980s (this was based on the unfounded assumption that people would rather be in nursing home care than NHS long-stay wards). This led to a big increase in long-term care costs and prompted the publication of the Community Care Act 1990.

This Act introduced new procedures for provision, management and funding of long-term care. The Act had six key objectives and to achieve these a number of changes were implemented.

### **Community Care Act 1990: Objectives**

1. To promote domiciliary, day and respite services to enable older people to live in their own homes wherever practicable.
2. To provide practical support to carers, such as financial help and information about services.
3. To assess need and have good management to ensure high quality care.
4. To promote the development of independent care providers.
5. To clarify the responsibilities of care agencies, community care plans should show who is responsible for which services.
6. To secure better value for taxpayers' money.

### **Community Care Act 1990: The Key Changes**

1. Local authorities (LA) responsible for assessing individual need, designing care arrangements and securing their delivery (within the resources available).
2. LA to plan developments of community services consistent with the plans of the Health Authority and other interested parties.
3. LA must show they are making maximum use of the independent sector.
4. A new funding structure for those entering residential and nursing homes now funded by LA.
5. Applicants with few resources to be eligible for the same level of support whether they are living in their own homes or independent residential or nursing homes.
6. LA responsible for checking standards in both their own and independent residential homes.

The long-term care budget was transferred to social services and managed locally, as was responsibility for assessment for long-term care



placement. The expansion of social services-funded long-term placements enabled easy discharge from hospital and allowed hospitals to close long-term care beds. Variability in the extent to which long-term NHS beds were closed meant that patients in one area would receive free NHS continuing care, whereas those in a different area would have to fund their long-term care. These discrepancies were addressed in the requirement of Health Authorities to make some provision for NHS-funded continuing care beds.

### **The Continuing Care Act 1996**

One of the effects of the Community Care Act was to lead to large-scale closure of long-stay NHS beds, but there was regional variation in the number of bed closures. Attempts to redress this inequality were instrumental in the publication of the Continuing Care Act, which forced Health Authorities to provide adequate long-term care under the NHS.

#### **The Continuing Care Act 1996: Key Objectives**

1. To require health authorities that had withdrawn excessively from continuing health care to fill important gaps in services.
2. To clarify NHS continuing care responsibilities.
3. To strengthen working relationships between health and local authorities.
4. To define clearly patient rights concerning discharge and continuing care.
5. An increased openness and consistency about continuing care decisions.

The NHS responsibilities for continuing care cover not just those individuals in nursing or residential homes, but ongoing responsibility for other aspects of long-term care either in the individual's home or nursing or residential home.

#### *Aspects of continuing care provided by the NHS*

1. Rehabilitation.
2. Palliative care.
3. Respite healthcare (only in specific circumstances where patient needs inpatient stays for

active treatment or intensive therapy or where it is not possible to carry on home care when carer needs respite).

4. Access to specialised medical and nursing support at home.
5. Community health and primary care.
6. Specialist transport.

#### *Eligibility criteria for long-term care on the NHS*

Eligibility criteria for long-term care on the NHS can be interpreted in different ways. In a recent court case, Ms Loughlan challenged her local authority's right to shut the nursing home where she lived, claiming that she had a "home for life". The high court judgement had three main effects. First, that the application of "excessively" tight eligibility criteria will not allow Health Authorities to relinquish their long-term care responsibilities (Ms Loughlan argued that by applying overly strict criteria for eligibility for NHS long-term care in the home—and therefore restricting resident numbers to levels where it was not economical to run the home—the health authority attempted to create a situation where it could justify closing the home). Secondly, by highlighting the fact that whilst Ms Loughlan's place in her home had been funded by NHS continuing care, it was clear that many other residents in homes around the country with equal and greater care needs were being funded not by the NHS but by social services or by self-funding. This identified potential areas of future litigation. Thirdly, it illustrated the inherent injustice in the system where nursing care is free in NHS hospitals or at home, but not to those in residential or nursing homes (where the local authority or individuals pay).

This case put increasing pressure on the government to act on the recommendations of the Royal Commission into long-term care.

#### *Criteria for NHS long-term care*

The patient must have one or more of the following:

1. A condition, disability or behaviour that changes at least weekly with no set pattern
2. A condition, disability or behaviour which is progressively deteriorating
3. A persistent vegetative state
4. A behaviour which is severe and not anticipated to improve and which is challenging to a

wider social environment or places the individual or others at risk

5. A short-term terminal illness (4–6 weeks)

Additionally they will need:

1. Continual nursing supervision, monitoring and interventions
2. Continual access to medical interventions, supervision and monitoring
3. Continual access to specialist nursing and therapist services

### **Better Services for Vulnerable People 1997**

This paper recommended improving the links and provision of service between primary and secondary care. It highlighted the importance of community care and advocated:

1. Effective joint investment plans for services to meet the continuing and community care needs of the local population
2. Improved content and process of multidisciplinary assessment of older people, both in hospital and in the community
3. Health and social care services for older people, which focus on optimising independence through timely recuperation and rehabilitation

### **Health Advisory Service 2000**

*“Not because they are old”*

This report was commissioned by the Department for Health following *The Observer* newspaper’s ‘Dignity on the Ward’ campaign. It looked at the care on 16 randomly selected acute hospital wards in England. The HAS examined patient, relative and staff attitudes and experiences of care of the older patient in the wards.

The report highlighted a number of deficiencies, including:

1. Delays in admission
2. Shortage of equipment and supplies
3. A lack of staff
4. Difficulties in ensuring that patients were fed properly

The report had a large impact on the early launch of the NHS National Performance Assessment Framework for older people.

*“The new NHS, modern, dependable: A national framework for assessing performance”*

The national performance assessment framework initiated the concept of clinical governance, which was developed further in *A first class service—quality in the New NHS*. Clinical governance is a “framework through which the NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish”. (See the chapter on management by Belfield.)

National Standards Frameworks set national standards and define service models for specific patient groups or services. They put into place strategies to enable implementation of the changes recommended and developing performance measures to evaluate the effect of the changes made. The report is accompanied by a set of performance indicators which are intended to identify need for further investigation and action.

External reference groups (ERGs) will focus on those areas most important to older people. The ERG will advise the Department of Health on the development of generally applicable standards of healthcare and guidance in implementing the standards.

Their remit includes models of care in primary and community, transition to and from hospital, assessment and care management and performance measures to monitor standards.

### ***With respect to old age. A Royal Commission Report on Long-term Care, 1999***

The Royal Commission on long-term care was established by the Labour Party to examine the short- and long-term options for funding of long-term care for elderly people.

The main recommendations are:

1. That the cost of care for those who need it should be split, so that nursing and personal care should be paid for by the state from general taxation, whereas housing and living costs

- should be paid for by the individual and government (subject to means testing)
2. That government should establish a national care commission to monitor longitudinal trends, including demography, spending and ensuring transparency and accountability in the system. It should represent consumer interests, keep under review the market for residential and nursing homes and set national benchmarks
  3. That government should ascertain how much money from NHS, Social Services and Housing budgets supports older people in residential and nursing homes
  4. That the value of the older person's home should be disregarded for 3 months after placement in a residential or nursing home. That an opportunity for rehabilitation should be included as an integral and initial part of any care assessment before any irreversible decision on long-term care is taken
  5. That research on cost-effectiveness of rehabilitation should be a priority. This should not, however, delay the development of a government-led national strategy on rehabilitation which should be emphasised in the performance framework for the NHS and Social Services
  6. That better services should be offered to those people who currently have a carer
  7. That the government should consider national carer support schemes
  8. That the national care commission should make projections of long-term care cost every 5 years

The government should conduct a scrutiny of the shift of resources between agencies and consider whether there should be a transfer of resources between the NHS and social services.

**Extensive information on government policies and reports are available on the NHS executive website.**

**Be aware of government funding for community care initiatives.**

One of the main thrusts of the long-term care commission's report was emphasis on the importance of the inter-disciplinary assessment.

The request for a needs assessment can come from a variety of sources—older people themselves, their carers or family and those working in

acute care, primary care, social services and voluntary organisations. There are wide variations in the quality of assessment. There should be a single point of contact to arrange assessment and care. For complex cases an inter-disciplinary team assessment is necessary. The team may consist of geriatrician or old age psychiatrist, general practitioner, nurse, social worker, housing manager or therapist.

The timing of the assessment should be when patients have recovered from their acute illness and are stable. There should be optimum rehabilitation. Any placement in long-term care should not be final but open to review and reassessment. This means that the older person's home is maintained until after the assessment.

No one should enter long-term care without assessment, rehabilitation and treatment. This should reduce inappropriate long-term care.

The effectiveness of geriatrician-led inter-disciplinary assessment and management (compared to alternative hospital-based specialists and primary care teams) is now established and leads to improved chances of older people remaining at home over the subsequent year.

Comprehensive geriatric assessment helps postpone transfer to long-term care, reduces the length of initial hospital stay, reduces readmissions and improves functional outcome. For the assessment to be effective, it must be acted upon and followed up to ensure that recommendations are carried out.

## QUALITY IN LONG-TERM CARE

### NHS Long-term Care Facilities

There is no mechanism for routine inspection of long-term care facilities within the NHS. The Hospital Advisory Service 2000, which has existed under various names with differing roles since 1969, published *Not because they are old* which should lead to changes in how service and care provision will be monitored.

### Private Nursing and Residential Homes

Residential homes provide a level of personal care that could be expected from a caring relative at

home. They do not provide any nursing care. They are registered by the Social Services.

Nursing homes are subject by law to examination by the nursing homes inspectorate, (part of the health authority), who are obliged to visit each home twice a year, one visit being unannounced. Additionally, visits can take place as often as they feel necessary. They have the ability to close a home, if it is in the public interest.

The distinction between residential and nursing care is often artificial. The needs of residents represent a spectrum of care rather than two defined categories. This is reflected in the number of residents (perhaps 30%) placed in the 'wrong' category of home. Individuals' needs may alter over time. The number of dual-registered homes is increasing. There is therefore an impetus for a combined and independent residential and nursing homes inspectorate.

## QUALITY INDICATORS IN LONG-TERM CARE

### Continuous Assessment Review Evaluation

Clinical indicators on areas such as continence promotion, prevention of pressure sores, falls and accidents have been reviewed by working parties of the Royal College of Physicians London and BGS. The CARE scheme (Continuous Assessment, Review and Evaluation) was developed from these guidelines and has been evaluated as an audit tool. The CARE scheme guidelines are available from the Research Unit of the Royal College of Physicians (The CARE Scheme (Continuous Assessment, Review and Evaluation): *Clinical Audit of Long Term Care of Elderly People*, 2nd Edition.<sup>4</sup>

### Resident Assessment Instrument (RAI)

The nursing home resident assessment instrument was developed in the USA as a national measure of residents in nursing homes. Central to the RAI is a set of assessment items known as the Minimum Data Set (MDS), which are 'minimal' in that they contain all the key elements for comprehensive assessment (rather than 'minimal' meaning short). The MDS is used for assessment and care

screening. The more detailed resident assessment protocols cover many important areas reflecting common clinical problems or risks for nursing home residents. Residents are assessed on admission to nursing homes and annually thereafter, with further assessment if there is any change. The use of the RAI improves resident functional outcome and reduces hospitalisation. It can also be used to assess and monitor quality of health care. Its limitations are in the time needed by nurses to do the assessment (an average of 1 hour 20 minutes per resident). Improvements will only be seen where nursing time, training and funding are available to act on areas where changes are needed.

## ROLE OF PRIMARY CARE GROUPS AND TRUSTS

Until recently, most general practitioners were in fund-holding practices and could commission whatever support services they felt necessary (e.g. chiropody or phlebotomy services). In 1999, fund-holding stopped and was replaced by amalgamation of general practices into primary care groups (PCGs) with an average population of 100,000. Currently, PCGs have limited commissioning rights (in some ways less than was available under the old scheme). As more PCGs become primary care trusts (PCTs), they will have powers to employ directly other physicians such as geriatricians with an interest in community care. The PCGs and PCTs are encouraged to form partnerships with other agencies involved with health care in its broadest sense. For example, if a PCT wanted to focus on ischaemic heart disease in elderly people, they could employ a geriatrician with an interest in cardiology to advise them on service development and provide a clinical service. This might include provision of nicotine replacement patches on the NHS (non-prescription at present), developing a lipid monitoring clinic, or buying sessions from local sports clubs for rehabilitation.

### Get to know the agenda of social services and primary care groups and the health authority.

The role of a geriatrician in the community can include:

1. Assessments at home for level of home care or residential and nursing home placement of chronically ill older people (protocols, quality assurance)
2. Assessment before discharge from hospital of older people for appropriate home care package or residential, nursing home care
3. Acute interventions to ill older people in their homes, residential or nursing homes
4. Developing alternatives to hospital care
5. Provision of respite care (in hospital, nursing or residential home)
6. Education in nursing and residential homes
7. Education and liaison among other concerned parties (e.g. social services, health authority and voluntary groups)
8. Quality assurance of nursing home staff and advising on protocols
9. Improving carer support
10. Liaison with GPs in primary care groups
11. Research into community care

### **DEVELOPING ALTERNATIVES TO HOSPITAL CARE**

One aim of community geriatrics is to develop flexible and responsive health and social care schemes for older people. Examples of possible alternatives to hospital care are:

1. Community rehabilitation
2. Intensive domiciliary support schemes
3. Rapid response nursing teams
4. Hospital-at-home schemes
5. Intermediate care homes
6. Respite care home
7. Hospice
8. Urgent home visit by consultant

### **AREAS OF CARE WHICH HAVE MOVED INTO THE COMMUNITY**

Psychiatric care, planned nursing respite care and palliative care have all moved much of their work from the hospital into the community. The management of patients out of hospital might be appropriate and better for some patients. For example, home treatment of acute psychiatric illness is safe and effective and preferred by

patients and carers. There have, however been difficulties relocating some long-stay institutionalised psychiatric hospital residents into the community. Additionally, press reports of tragic cases of apparent failure of community care remind us of the potential dangers of such a change in service provision.

The main lesson from psychiatric care is that community management can work, but should not be seen as a cost-saving or low-input care.

There is some evidence to support the growth of care in the community, e.g. treatment of deep vein thrombosis at home. Many other areas (e.g. intravenous antibiotic use) need more evaluation before they can be implemented.

### **Early Discharge Post-stroke and Domiciliary Rehabilitation**

Early post-stroke discharge and a well-coordinated rehabilitation programme at home may be at least as good as hospital-based rehabilitation.

1. Randomised controlled trial to evaluate early discharge scheme for patients with stroke.<sup>5</sup>

This paper was the first randomised controlled trial of early discharge post stroke with domiciliary rehabilitation.

This prospective randomised trial assessed the clinical effectiveness of an early discharge policy after stroke with community rehabilitation versus ordinary care in an inner city. Of 331 subjects (mean age 71), 167 received specialist community rehabilitation for 3 months. Mean length of stay fell from 18 to 12 days in the early discharge group, with no important differences in outcome at 1 year. Patients were recruited from two hospitals with a range of ward type, thus increasing the generalisability of the study. Limitations were the use of the Barthel Index as the main outcome measure—it is insensitive to change at higher scores, so minor differences may not have been detected. The repeat Barthel assessment at 1 year may have missed clinically important change occurring in the initial stages of recovery.

The evidence of further trials in early discharge after stroke is needed before this approach can be adopted in everyday practice.

## Domiciliary Rehabilitation After Stroke

1. Shared responsibility for ongoing rehabilitation: a new approach to home based therapy after stroke.<sup>6</sup>

This randomised controlled trial of 100 patients discharged from hospital after stroke to either weekly home visit by an occupational or/and physiotherapist or usual care with outpatient or day hospital therapy for three months. There was no significant difference between the groups in any outcome measure. (These included activities of daily living, gait speed, limb function and mood of subjects and caregivers.) A supervised home-based programme can be as effective as outpatient or day hospital therapy.

2. Hospital and home-based rehabilitation after discharge from hospital for stroke patients: analysis of 2 trials.<sup>7</sup>

The study collated the results of two previously published randomised controlled trials from Bradford and Birmingham on hospital or home-based rehabilitation after stroke. There was no significant difference in terms of efficacy between hospital and home treatment.

## Early Discharge After Hip Fracture

1. Rehabilitation after hip fractures. Home and hospital management compared.<sup>8</sup>

This prospective study compared supported home rehabilitation with traditional hospital management in two similar groups. Early discharge from hospital and home rehabilitation produced substantial savings in bed days and provided more effective rehabilitation. The mean length of stay was reduced from 22 days to 14 days.

## ACUTE CARE AT HOME SCHEMES— SPECIFIC CONDITIONS

### Acute Exacerbation of Chronic Obstructive Pulmonary Disease

1. Home treatment of exacerbations of chronic obstructive pulmonary disease by an acute respiratory assessment service.<sup>9</sup>

This prospective study assessed 962 patients (mean age 65: range 27–94) referred to hospital with acute exacerbations of chronic obstructive airways disease. Each patient had a chest X-ray, spirometry, pulse oximeter and/or arterial blood gases and physical examination. Fifteen per cent required immediate admission and 12% were admitted subsequently, but 68% (653) were managed entirely at home with a tailored treatment plan, including a daily visit from a respiratory nurse.

The decision to admit was based on the severity of the exacerbation as defined by clinical examination and test results, the degree of support in the community, mental state, 'frailty' and comorbidity.

Home treatment included home nebuliser, oxygen concentrator, steroids and antibiotics. This approach was safe — only one patient died at home. It was well liked by the patients — only 13% would have preferred to be admitted. The question of home treatment failures (those 115 (12%) who were subsequently admitted from home) remains difficult, as no clinical indicators reliably predicted subsequent need for admission.

Home management of exacerbation of COPD is possible after initial hospital assessment but work on elderly people is needed.

### Congestive Cardiac Failure

Acute worsening of congestive cardiac failure can be managed successfully at home. Some researchers give intravenous inotropic support at home.

1. A study of the relationship between home care services and hospital readmission of patients with congestive heart failure.<sup>10</sup>

A total of 1176 patients admitted to hospital with a primary diagnosis of congestive cardiac failure were studied for 3 months. Those receiving home nursing had a lower readmission rate than those without this support.

2. Stewart, S. *et al.* also found that continuing home nursing support reduced readmission rates after an episode of congestive cardiac failure.<sup>11</sup>

- Home inotropic therapy can reduce hospital stay and improves functional class in patients with advanced heart failure.<sup>12</sup>

### Deep Venous Thrombosis

Low molecular weight heparins have longer plasma half-life, better bioavailability and more predictable anticoagulant effects. Using simple subcutaneous dosing regimens, both distal and proximal deep venous thrombosis (DVTs) can be managed at home with support from nursing teams and use of outpatient warfarinisation protocols.

- A comparison of low molecular weight heparin administered primarily at home with unfractionated heparin administered in the hospital for proximal deep vein thrombosis.<sup>13</sup>

The main limitations to community management of DVT are the delays in obtaining venogram or Doppler imaging.

### Blood Transfusion

Domiciliary transfusion of blood products is widely used and provides a safe and acceptable alternative to hospital admission.<sup>14,15</sup>

### Other Areas

Parenteral nutrition and long-term ventilation are also areas with potential for out of hospital care provision.<sup>16,17</sup>

## HOSPITAL-AT-HOME SCHEMES

The hospital-at-home scheme was pioneered in the “Hospitalisation à Domicile” in France in 1961. Many schemes have subsequently been reported in the USA, Canada, Holland and the UK. Although these schemes were of different designs, they all aimed to facilitate early discharge of patients from hospital to home (rather than preventing hospital admission). A systematic review of hospital-at-home schemes (Shepperd and Iliffe, 1997) has found lack of evidence of benefit in clinical outcomes or cost benefits.

## CONVALESCENT INTERMEDIATE CARE HOMES

The National Beds Inquiry (February 2000) concluded that the trend of bed closures had gone too far. The over-75s accounted for half of the increase in acute emergency admissions, half of whom had “symptoms and signs of ill defined conditions”. An increase in the number of intermediate care beds is seen as one way to cope (along with an increase in general medical beds). The government has announced its intention to open new convalescent ‘intermediate’ care homes, bridging the gap between hospital and home. They may be based in hospital or revamped cottage or community hospitals. Evidence for effectiveness is awaited.

## CONCLUSION

Some rehabilitation programmes and the care of specific acute medical conditions can be managed at home. Most need much more research—especially for older patients. Successful implementation will depend upon coherent medical, nursing and therapy services working with well-defined protocols.

## Research Areas

A potentially important development in nursing home care is the teaching nursing home. This could encourage quality research in nursing homes.

**Collect data to produce audits of your projects, outcomes.**

## Training

Geriatricians in training should ensure that they develop the skills needed for community care. They should gain experience of long-term care, respite care and learn from geriatricians with an interest in community care.

A challenge is to persuade trust and primary care services that they need a geriatrician lead in community matters.

## SUMMARY

Given the changing demographics of our country, pressure on hospital beds and government policy, community involvement of geriatricians will increase. However, there is a dearth of evidence on which to base such a change. This is a challenge to consultant geriatricians with an interest in community care.

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## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

- Consultants in elderly care with an interest in community geriatrics should:
  - Have little recourse to hospital facilities
  - Provide direct care for all nursing home residents
  - Take a lead role in developing alternatives to hospital care
  - Have strong links with local general practitioners
- Important areas of service development might include:
  - A consultant-run nursing home
  - Out of hospital rehabilitation services
  - Acute illness intervention teams
  - Consultant clinics in GP surgeries





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## 6. Medical ethics and the law

Jim Eccles, Kevin Stewart, Claire Spice and Gurcharan S. Rai

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### LEGAL FRAMEWORKS FOR THE PROTECTION OF OLDER PEOPLE

*“...the regimen I adopt shall be for the benefits of the patient according to my ability and judgement, and not for their hurt or for any wrong...”* Hippocrates (470–400 BC)

Both medical ethics and the law are concerned with the wellbeing of the individual — even though at times there may be conflict between what is regarded as the ‘right thing to do’ morally and what is regarded as the ‘right’ in law. Despite the differences, both share one principle, i.e. respect for individuals’ autonomous right to make decisions concerning themselves and to ensure there are safeguards for those who are not able to decide for themselves.

In clinical practice it is therefore important for doctors to understand principles of medical ethics, how to apply them in clinical decision-making and have up-to-date knowledge of the law governing elderly subjects. There are five categories of legal procedures that offer protection to older people:

1. Procedures available for compulsory admission and treatment of patients with mental illness
2. Procedures available for use with patients who do not have a psychiatric illness but are considered to be at risk at their homes
3. Legislation governing provision of care and services for older people
4. Legal procedures for financial protection of older people
5. Anticipated developments in legal protection

### Legal Procedures Available for Compulsory Admission and Treatment of Patients with a Psychiatric Illness

*Mental Health Act 1983*

#### Introduction

The Mental Health Act can be used for patients with any formal mental illness, including delirium and dementia. It is unusual to use the Act for such patients, as treatment can be given under Common Law in the patient’s best interests. Furthermore, treatment under the Act only applies to treatment of the mental illness itself and not to any co-existing physical illness. Having said this, it is possible to treat the physical illness which is the cause of a symptom of a mental illness. For example, under the Act it is possible to force-feed a patient with anorexia nervosa, but not to amputate a gangrenous leg because a person has schizophrenia.

Although doctors have the power to recommend compulsory admission under the Act, social workers or relatives have the main right to make a formal application.

#### Definitions included in the Act

- Mental disorder—mental illness, arrested or incomplete development of mind, psychopathic disorder and other disorder or disability of mind
- Mental impairment—impairment of intelligence and social functioning
- Severe mental impairment—‘a state of arrested or incomplete development of mind which includes severe impairment or intelligence and social functioning and is associated with abnor-

mally aggressive or seriously irresponsible conduct on the part of the person concerned'

- Psychopathic disorder—a persistent disorder or disability of mind which results in abnormally aggressive or seriously irresponsible conduct on the part of the person concerned
- Duties of approved social workers
  - to gather information and co-ordinate the assessment process
  - to safeguard the civil liberties of the patient
  - to ensure that admission to hospital or guardianship is appropriate
  - to ensure that the necessary treatment recommended by the approved doctors is the least restrictive of all options.

#### Provisions of Act

##### *Section 2*

Under this section, a person can be formally admitted to hospital for assessment, observation and subsequent treatment.

- The application for this can be made by the patient's relative, a social worker or a person given power to act on the patient's behalf on recommendations of two registered medical practitioners.
- The assessment period lasts for 28 days.
- The grounds for application are i) the patient is suffering from a mental disorder of a nature and degree which warrants detention for assessment (or assessment followed by treatment) and ii) the detention is in the interests of the patient him or herself (health and safety) or for the protection of other people.
- In case of urgent need, an application can be made on a recommendation of one practitioner.

##### *Section 3*

This allows admission for compulsory treatment of mental disorder or illness for six months. The grounds for application include:

- The treatment is necessary for the health and safety of the patient and others
- The person has a mental illness, severe mental impairment, or psychopathic disorder, the nature of which makes it appropriate to receive treatment
- The treatment is likely to alleviate or prevent deterioration of the condition

The application procedure is similar to that for sectioning under Section 2, except that under Section 3 the nearest relative must be consulted when an applicant is a social worker.

##### *Section 4*

Under Section 4 of the Mental Health Act 1983, a person can be admitted as an emergency by reason of 'urgent necessity' and for this only one medical recommendation is required.

- If they cannot cope with the patient's behaviour, social workers or relatives may ask for this.
- There must be an immediate significant risk to the patient or others.
- The doctor recommending emergency treatment should, if practicable, have known the patient before and have seen him in the previous 24 hours.
- The period of detention is a maximum of 72 hours, but this can be converted to 28 days by seeking a second specialist opinion.
- The patient has no right of appeal during the first 72 hours.

##### *Section 5*

This section provides holding power for a doctor or a nurse for forcibly detaining informal patients for up to six hours. The consultant (or deputy) can enforce the detention for 72 hours. This applies to patients receiving inpatient treatment for a physical condition but not for patients being treated in the outpatient clinic or day hospital.

Under Section 5 (2) the medical practitioner responsible for treating a patient can make an application to detain the patient in hospital by writing a report to the managers. If the medical practitioner in charge of clinical care of a patient is likely to be absent, they can nominate another in their absence.

Under Section 5 (4) (nurse's holding power) a nurse can detain patients who are receiving treatment for mental disorder as an inpatient in a hospital if the nurse feels that it is necessary to do so for their safety or for the safety of others and it is not practicable to get a doctor to attend to the patient for the purposes of preparing the report for application. The nurse can detain the patient in hospital for six hours.

### Section 7—Guardianship

This section allows the local authority to act as ‘guardian’ (or a relative accepted by the local authority) to a person with a mental disorder or mental illness or mental impairment and therefore provide community care. It may be used where there is conflict between the wishes of the relative and what is considered to be in the best interests of the patient. The guardian has power:

- To require an individual to live in a particular place
- To require access to be given to doctors, social workers and others at any place where the individual lives
- To attend a particular place for treatment

For this section to work effectively co-operation is required: the social worker does not have the authority to remove patients from their home if they refuse to do so and this can cause major difficulties for the appointed ‘guardian’. To enforce this section, signatures of two registered practitioners (one of whom should be a specialist) are required.

The maximum duration is six months but it is renewable for a further six months, then year to year.

### Section 117

This applies to people detained under Section 3 and Section 37 of the Mental Health Act 1983. Under this, the local authority as well as health authority have a duty to carry out joint assessment and provide services.

### The Mental Health Commission

The Mental Health Commission has responsibility for overseeing the treatment of compulsorily-detained patients and for dealing with complaints from detained people as well as their carers.

### Restraint of elderly patients

Freedom of movement is an important basic right enforceable through a writ of *habeas corpus*. The clinical use of restraint raises moral and ethical dilemmas—particularly when the individuals are too confused and therefore not competent to make a decision for themselves.

While it is morally unjustifiable to restrain an elderly patient, there may be a case for using

restraints in the case of patients who, because of their mental condition, are at risk of harming themselves. Under these circumstances, the Act permits such an action as long as it is being performed in the best interests of the patient. (Under Section 5 (4) a nurse is allowed to use the minimum force necessary to prevent a patient from leaving the hospital.)

### Procedures for Use in Patients Who do not Have Acute Psychiatric Illness But Who are Considered to be at Risk at their Homes

#### National Assistance Act 1948 Section 47

Under this section the local authority can seek an order from a magistrate to remove an individual who is considered to be at severe risk at home. For this section the person does not need to have a mental disorder or mental illness. Application can be made by a social worker, provided it is supported by a community physician. The grounds should include:

- A person who is suffering from a grave and chronic disease, or being aged, infirm or physically incapacitated, is living in insanitary conditions, and
- Is unable to look after him or herself and is not receiving proper care and attention from others

Relatives do not have any say in this and the patient has a limited right of appeal.

A typical example is a person with a fracture who cannot look after himself. The living conditions are deteriorating, yet the patient refuses to go to hospital.

### Legislation Governing Provision of Care and Services for Older People

#### National Assistance Act 1948 Section 21

Under this section, local authorities are empowered to provide accommodation for people over 18 who are disabled or ill or are in need of care purely as a result of age. In 1993 this was converted from a power to a duty. It directed the local authorities to provide temporary accommodation for those who have no alternative accommodation; those who are

in urgent need because they have a mental disorder; or to prevent mental disorder.

#### *National Assistance Act 1948 Section 29*

Under this section local authorities are empowered to provide a social work service and to make arrangements for promoting the welfare of disabled persons (i.e. those who are deaf, blind, dumb or suffer from a mental disorder of any description or are handicapped as a result of illness, injury or other disabilities).

#### *Chronically Sick and Disabled Persons Act 1970 Section 2*

The services provided under this section include practical assistance in the home, home adaptations, transport for a person to use services, meals and telephones.

#### *Health Services and Public Health Act 1968 Section 45*

This empowers the local authority to provide a wide range of services for elderly people in order to promote their welfare. These services may include meals, day centres, home helps, home adaptations and social work support.

#### *The National Health Service and Community Care Act 1990*

Section 47 of this Act placed the responsibility on the local authorities for planning, financing, delivery and regulation of community care services to vulnerable groups, including the elderly and mentally ill.

#### *The Carers (Recognition and Services) Act 1995*

This Act enabled local authorities to assess the needs of carers and individuals in need of community care services. It does not apply to Northern Ireland.

#### *The Social Work (Scotland) Act 1968*

Under this Act, social work departments must provide guidance, advice and assistance to people

in need of care because of age, infirmity or because they have a physical illness or mental disorder.

### **Legislation Providing Financial Protection for Elderly**

#### *Power of Attorney*

Elderly people may become unable to manage their financial affairs because of physical illness, mental illness, or both. Those who are physically disabled and have reasonable grasp of their financial affairs can give authority to an individual (an attorney, who is usually a relative or close friend), to undertake financial transactions such as going to the bank to get money or paying bills.

#### *Enduring Power of Attorney*

This is given by an individual who still has mental capacity and (unlike Power of Attorney) continues even when that individual becomes incapable of managing their financial affairs. It is commonly used by those in the early stages of dementia. The Attorney (an individual with the Enduring Power of Attorney) has unfettered and unchecked access to the financial assets of the person who had made the power and has the authority to sign cheques, withdraw money from savings accounts or buy or sell the house. It is also the Attorney's responsibility to register this with the Court of Protection in England and Wales (or the High Court in Northern Ireland) when an individual loses mental capacity.

Before registration, the Attorney must inform the donor and certain relatives.

#### *The Court of Protection*

When people lose testamentary capacity, their spouses, friends or other relatives can apply to the Court of Protection. The application can also be made by a solicitor. A doctor has to complete a certificate confirming that the individual does not have testamentary capacity. The Court will usually appoint someone as Receiver, whose duty is to act as the patient's agent (Receivers cannot just dispose of assets for their own benefit).

### Assessment of testamentary capacity

People have capacity to make a will if they:

- Know the nature of action involved in making a will
- Have a reasonable grasp of the extent of their assets
- Know the person or people to whom they are leaving their property and money
- Are free of delusions, which might distort judgement.

- The proposed treatment is the least restrictive or invasive alternative

And either:

- There is lack of capacity to consent to treatment necessary for the health and safety of the patient or for the protection of others from serious harm; or,
- There is capacity to consent, but there is substantial risk to the safety of patients or others if they remain untreated.

## Anticipated Developments in Legal Protection

### *Reform of the Mental Health Act*

In 1999 the government presented proposals for consultation to parliament. These are expected to form the basis of a new Mental Health Act. They include the following suggestions.

Powers to detain patients and give compulsory treatment which will extend outside hospitals so that compulsory treatment can be combined with community care. The government intends to 'break the automatic link between compulsory care and treatment, and detention in hospital'.

A decision to impose compulsory care and treatment will be based on the Law Commission's test of capacity. People will be considered to lack capacity if either:

- They are unable to *understand* or *retain* the information relevant to the decision, including information about the reasonably foreseen consequences of deciding one way or another or failing to make the decision; or,
- They are unable to make a decision based on the information relevant to the decision, including information about the reasonably foreseeable consequences of deciding one way or another or failing to make the decision.

The tribunal who would then authorise compulsory care and treatment would need to see that the following criteria were satisfied:

- There is mental disorder, serious enough to require compulsory care

### *Making decisions*

In 1999, the Lord Chancellor's office published a policy statement entitled *Making Decisions*. This contains proposals to change the law to protect mentally incapacitated adults, as originally suggested in the consultation paper 'Who Decides'.

The proposals include:

- A new statutory test of mental capacity, including a presumption of capacity unless proved otherwise, and a requirement to encourage and enable residual capacity where present
- A new general authority to act reasonably in the patient's best interests
- Health and welfare decision-making by the Court of Protection, which will appoint a manager to deal with welfare and healthcare matters as well as finances
- A new Continuing Power of Attorney, which will allow people to nominate friends or relatives to make health and welfare decisions on their behalf, should they lose capacity

### *The Human Rights Act, 1998*

This became law in the UK in 2000, and made it unlawful for either public bodies or courts to act in a way that is incompatible with human rights (as defined by the European Convention of 1953). These rights are as follows:

- The right to life. This could affect the management of persistent vegetative state patients, or the management of patients requiring artificial feeding

- The right not to be subjected to inhuman or degrading treatment. This could affect the debate about euthanasia. It may also affect the public view of compulsory treatments and physical restraint
- The right to liberty (save for those of ‘unsound mind’). This may conflict with the new Mental Health Act
- The right to a fair trial. This may include disciplinary proceedings, such as those of the GMC
- The right to marry and have a family. This may be used to challenge the rationing of fertility treatments

## ETHICAL THEORY IN THE CARE OF OLDER PEOPLE

### Autonomy

A person’s autonomy is defined by the extent to which that individual can control his or her own life. It is an aspirational concept, because of a variety of factors which tend to restrict self-determination. These have been defined by Harris as defects in self-control (e.g. mental illness), defects in reasoning (e.g. the self-deception involved in drink-driving), defects in information (e.g. when withheld from patients) and defects in stability (exhibited by inconsistent choice). Whereas defects in self-control and reasoning may be used to justify a more paternalistic approach, defects in information should be remediable—for example, to correct a false impression which a patient may have of a proposed new treatment. Inconsistency of choice by a patient may be a reason to delay a final decision about a treatment, but even rational individuals may be inconsistent, and freedom to make an independent choice must include the freedom to choose unwisely, whatever the patient’s age.

### Consent

In general, decisions about health care should be made by individuals, with advice and information from their doctors. Competent adults must give consent for all medical procedures or investigations. For consent to be valid, patients must be competent and fully informed and consent must be voluntary.

Consent may be implied or explicit. Most consent is implied. By presenting himself in the

doctor’s surgery and removing his shirt, a patient implies that he consents to an examination of the chest. For specific procedures, such as surgical operations, explicit written consent is obtained. However, to be valid, the conditions still have to be met whereby the patient is competent and fully informed; simply having it in writing does not mean that it is always valid.

The opportunity to give consent is counter-balanced by the right to refuse it. If rational, competent adults have been fully appraised of the consequences of not receiving treatment, but continue to refuse it, then their wishes should be respected.

In England, Wales and Northern Ireland no one can give consent on behalf of an incompetent patient. In these circumstances, responsibility rests with the treating doctor for deciding on treatment options ‘in the best interest’ of the patient. When deciding about these best interests, the doctor will want to take into account the patient’s previously held views and values and he or she will often gain insight into these by discussion with family and friends. However, contrary to popular belief, family members, friends or those with Power of Attorney do not currently have any legal right to make health care decisions on behalf of incompetent patients.

In Scotland the law differs and the powers of tutor *datives* may allow them to consent on behalf of incompetent patients.

According to the notes of guidance which accompanied the publication of the latest range of NHS consent forms, the standard consent form for competent adults should only be signed by the patient and the treating doctor. There is no place for a patient’s next-of-kin to countersign such a form, and any discussion with the patient’s relatives should be recorded in the notes. If the patient is regarded as not having the mental competence to give consent to the proposed treatment, then an alternative form is available for completion by two doctors—the doctor in charge of the case, and the doctor who will be carrying out the treatment (usually a surgeon). In other countries, more sophisticated consent forms have been developed. Some consent forms in the USA include records of specific agreements between doctor and patient about the management of any complications of the treatment. In Germany, they include diagrams of specific procedures, such as endoscopy, to enhance the understanding of the patient.

The status of consent to research on elderly patients may be complicated by the prospect of increasing physical and mental incapacity. 'Experienced consent', involving the repeated reassessment of the acceptability of research procedures, may be more appropriate.

### **Competence (or Capacity)**

These terms are used interchangeably and refer to the ability of individuals to make and communicate decisions about their own care and treatment. The Lord Chancellor's department has produced guidance for doctors assessing competence and proposes incorporating some of the principles which exist in common law into legislation. A functional approach is suggested, which would focus on whether, at the time when a decision has to be made, an individual was able to understand the nature and consequences of that decision.

*The government proposes that the following definitions are helpful, and will be apparently incorporated in legislation.*

- People are without capacity if, at the time that a decision needs to be taken, they are "unable by reason of mental disability to make a decision on the matter in question; or unable to communicate a decision on that matter because he or she is unconscious or for any other reason".
- Mental disability is "any disability or disorder of the mind or brain, whether permanent or temporary, which results in an impairment or disturbance of mental functioning".
- A person is to be regarded as unable to make a decision by reason of mental disability if the disability is such that, at the time when the decision needs to be made, the person is "unable to understand or retain the information relevant to the decision, or unable to make a decision based on that information".

A person may therefore lack capacity as a result of a condition which is unlikely to improve (such as dementia) or through a temporary alteration in mental state (e.g. delirium). Capacity may also be affected by severe physical illness (e.g. if a patient is very dyspnoeic or in severe pain).

The assumption is in favour of capacity. If in doubt, incapacity has to be proven. Capacity is also

decision specific; incapacity to make one decision does not necessarily imply incapacity for all decisions. Capacity may also fluctuate; the test of capacity should be applied to the specific decision which has to be made at the time when it needs to be made.

Most decisions about capacity do not require specialist psychiatric assessment and can be made by the treating doctor. In cases of doubt, psychiatric advice should be sought.

### **Privacy and Dignity**

According to the GMC, all doctors have a specific duty to respect patients' dignity and privacy.

The privacy of patients is most obviously under threat in institutions, where open plan, and particularly mixed-sex wards may provide a limited physical privacy. A patient's need for physical treatment may require intimate examination and attention, but unless there is an emergency, the patient should always be asked for permission to carry out such care. A refusal to agree to basic care may create a dilemma, but at least patients have had the opportunity to express their concerns. Mixed-sex wards are increasingly giving rise to concern about patient privacy, but the demands on emergency admission wards may mean that patients receive short periods of care in adjacent beds before definitive admission arrangements can be made.

Dignity is a more abstract concept, but the recent audit by Help the Aged, of 'Dignity on the Wards', revealed that patients and their carers often feel that hospital care is undignified. Although we have now begun to recognise the distress that ageist over-familiarity can cause, and nurses are taught to avoid the automatic use of first names, or calling all old women 'granny', we should perhaps go further, and afford a special degree of respect to our elders and their life experience.

### **Professional Ethics**

Patients' expectations that we will respect their confidences is an extension of their right to privacy. We are used to making our patients' records available to other doctors, and to nurses on the ward, but on elderly medical wards the interdisciplinary team may include physiotherapists,



occupational and speech therapists, dieticians, psychologists and social workers. All but one of those team members are likely to work for the hospital, or a related health care provider (the social worker is most likely to work for another agency). The social worker sometimes has access to sensitive information he or she does not want to share immediately with the rest of the team. If this information relates to suspicions of elder abuse, you may need to make it possible for the social worker to have an initial, confidential meeting with a senior doctor, in order to assess the benefits and risks of maintaining confidentiality in that case. If the team is planning to undertake a formal comprehensive assessment for community or residential care, then the patient should be informed about which other agencies will have access to information which you collect.

Comprehensive assessments now routinely involve a separate carer's assessment. This is an important acknowledgement that health services, and therefore ourselves as employees, have responsibilities to carers too (though our primary responsibility is the care of our patients). Responsibilities to carers may include the provision of information about statutory and voluntary services to support them in their caring roles. Carers often expect to be informed about a patient's diagnosis and prognosis before we inform the patient. We should only discuss such matters with our patient's permission—unless the patient is so ill that we think that such a discussion would be detrimental to his or her health. According to the General Medical Council (GMC), doctors should not withhold information about a patient's condition that is necessary for them to make decisions about their care, unless disclosure would cause them serious harm, and in this context 'serious harm' does not include becoming upset, or even refusing treatment.

### **Justice in the Provision of Healthcare**

When considering how best to distribute finite healthcare resources, it may seem reasonable to take a utilitarian approach, i.e. to extract from those resources the most benefit for the greatest number of patients. If we do so by directing resources towards those conditions which are cheapest and quickest to treat, we may create a medical

underclass of people whose chronic and expensive conditions are regarded as a drain on society. This economically-driven approach to health care has been described as 'economism', and it poses a particular threat to poor and elderly patients, who are most likely to have chronic diseases.

The concept of a QALY (Quality Adjusted Life Year) has been developed in order to assess the benefit of healthcare in terms of quality, and not just duration of life — a healthy life year is given a value of 1, and poorer health results in a lower value. Since old age often results in imperfect and failing health, and older patients have fewer remaining years of life, it appears that health care distribution according to QALYs will inevitably be ageist.

The ageism that already exists in the provision of specialist health care services (such as dialysis and cardiac surgery) may represent a more general prejudice against the provision of expensive health care for elderly people. This may be either openly or subconsciously based on the 'fair innings argument', in which elderly subjects are said to be less deserving than the young because they have already lived their 'natural' lifespan. Grimley Evans has demonstrated the absurdity of this idea by pointing out that a 'fair innings' would be one of good quality, so presumably the happier the life, the sooner the ageism should begin.

Rivlin<sup>13</sup> has suggested that ageist healthcare rationing should now be illegal, to bring it into line with discrimination on grounds of race or disability.

## **CLINICAL GUIDANCE AND CASE HISTORIES**

### **Withdrawing Artificial Nutrition and Hydration**

Because of recent public concerns, the British Medical Association has made recommendations based on the following principles;

- Artificial nutrition and hydration is regarded by the courts as a medical treatment
- There is no legal or ethical distinction between withdrawing and withholding a treatment, even though staff may feel that it is easier practically to withhold than withdraw treatment

In the UK drip and tube feeding is legally regarded as a medical treatment, even though there has been some debate about this. Such treatment does not therefore come within the realm of “basic care”. If decisions are made to withhold other treatments, then a decision should be made about nutrition and hydration as well.

The correct approach to take for some patients is clear. For those in a persistent vegetative state (PVS), this was established by the Bland and other cases. Even though withdrawing nutrition would inevitably lead to the patient’s death, this was considered legal in the circumstances and, of course, in the Bland case the patient died soon afterwards. In England, Wales and Northern Ireland (but not Scotland) all cases of PVS, where withdrawal of nutrition is being considered, must be referred to the courts. This is clear guidance for doctors, though most will rarely deal with patients in PVS. Many will, however, care for a few patients whose condition may be similar to those in PVS and perhaps for many other patients for whom decisions have to be made without clear guidance.

The BMA report addresses these other patient groups:

1. For patients whose condition closely resembles PVS but does not meet the strict criteria for this diagnosis, it is suggested that they are treated as PVS patients; i.e. an application should be made to the courts for a declaration.
2. For patients whose “imminent death is thought to be inevitable” then nutrition and hydration can be withheld if it is not considered to be of benefit to the patient. This group probably does not present many difficulties; if death is imminent then it is unlikely that there would be time for nutrition to benefit the patient anyway. However, many doctors will know how difficult it is to predict that death is imminent.
3. For patients whose wishes are not known and whose death is not thought to be imminent, the BMA proposes the following additional safeguards:
  - Decisions should be subject to a formal clinical review by a senior clinician who has experience of the condition from which the patient suffers and is independent of the treating clinical team.
  - All decisions made should be open to formal clinical review to ensure that appro-

priate procedures and guidelines have been followed. Anonymised information should be made available to the Secretary of State.

This has implications for individual geriatricians, for departments of geriatric medicine and for Trusts who must put in place local guidelines and mechanisms for auditing and reporting such decisions.

### Resuscitation Decisions

The 1993 BMA guidelines, updated in 1999 and drawn up in association with the Royal College of Nursing and the UK Resuscitation Council, give doctors a framework for developing local resuscitation policies. Further clarification may be provided by the paper by Doyal and Wilsher which suggests that thinking about competent and incompetent patients separately may be useful.

The problems which have traditionally been seen as relevant in this area may now be less common than they were but there has been a perceived lack of openness among doctors about resuscitation decision-making. This may have been inferred by the common practice of using codes in case notes to designate when patients were not for resuscitation (“not for 222”) or by a reluctance to document decisions at all.

Resuscitation policies should be based on the following ethical and legal principles:

- Competent fully informed adults must consent to medical treatment and have a right to withhold consent if they so wish.
- Competent adults must also give consent if a treatment, which would usually be considered appropriate in their circumstances, is to be withheld (for reasons other than medical futility).
- Under very exceptional circumstances, the duty to obtain consent from competent patients may be overridden by concerns that discussing treatment with patients will cause severe emotional distress which will be detrimental to their health.
- If adult patients are incompetent, then no-one else may give consent on their behalf and their doctors have a duty to provide (or withhold) treatment in what they consider to be the ‘best interests’ of patients.

- Doctors are not obliged to give treatment which they consider not to be indicated clinically or to be ineffectual (or futile), even if the patient requests it.
- Certain types of advance directives may carry legal force in the UK and government proposals may affect this area further in the near future.

Doyal and Wilsher consider that ‘Do Not Resuscitate’ (DNR) decisions can appropriately be made in the following circumstances:

#### *For competent patients*

##### Refusal

A fully informed, competent patient asks not to have CPR attempts should they be considered necessary.

Refusal of treatment does not have to be specific to CPR; it can be implied by a repeated refusal of life-saving or life-prolonging treatment of the sort which will be familiar to many geriatricians (“I don’t want to go on any more” etc.).

##### Futility (lack of medical benefit)

The patient is competent but his or her doctors feel that CPR attempts are so unlikely to succeed that they can be regarded as futile. In these circumstances, CPR is a treatment which doctors are not obliged to offer.

##### Poor quality of life

The patient is competent and CPR is regarded as a treatment which, should it become necessary, might work. However, the patient’s quality of life is regarded as so poor that they might not want any life-saving or life-prolonging treatments. In these circumstances, it is the patient’s view of their quality of life which is important (medical staff are known to underestimate quality of life in their patients). Patients need to be involved in discussions about CPR before decisions are made on these grounds.

#### *For incompetent patients*

##### Futility

As for competent patients, CPR must be considered very unlikely to succeed.

##### Poor quality of life

Though CPR may be effective the patient’s quality of life is considered so poor that life-saving treatment would be inappropriate. Since the patient is incompetent, consent is not appropriate but doctors must decide in the patient’s ‘best interests’. A previous advance directive may be helpful, as may discussions with family and friends, to determine what the patient’s view of their current quality of life might have been, when they were competent. While it is desirable to have consensus among family and friends about the patient’s best interests, the final decision rests with the doctor, not the family.

In addition, the updated BMA advice includes the existence of a valid advance directive refusing CPR (either specifically or as part of a more general refusal) as grounds for making a DNR order for an incompetent patient.

#### **Advance Directives**

An advance directive (AD) or living will is a statement made in advance by a patient who is mentally competent at the time, which states preferences for medical care if, at some stage, he or she should become incompetent. It is now established in English Common Law that in certain circumstances advance directives can carry legal force. It had been thought that the UK government intended to produce legislation in this area, but they have recently stated that they are content with the current caselaw.

There are several types of advance statement:

- Requesting statements (e.g. “if I develop this condition, then I want that treatment”)
- Refusing statements (e.g. “if I develop this condition or I have deteriorated to a specified extent then I do not want CPR/life-prolonging measures/ITU”)
- Statements nominating friends or relatives to make medical decisions on behalf of patients who are unable to make these themselves

Statements requesting certain treatments present difficulties because just as patients cannot request treatment which is not clinically indicated contemporaneously, they cannot also request it in

advance; doctors are not obliged to offer treatment which they don't think is indicated. They are therefore unlikely to carry legal force.

Statements refusing certain treatments (or refusing all treatments in certain circumstances) are an extension of an individual's right to withhold consent to treatment. They may carry legal force if certain conditions are met. These are:

- The patient must have been competent at the time the advance statement was made and must now be incompetent
- The clinical circumstances which have now arisen must be as envisaged by the patient when the statement was made
- The patient must not have been acting under duress when the statement was made

Statements nominating surrogate decision makers do not carry legal force; if patients are incompetent, then their doctors are obliged to treat them 'in their best interests'. The government has indicated its intention to change the law in this area. The existing Enduring Power of Attorney (governing financial decision-making for incompetent patients) is to be replaced by a Continuing Power of Attorney, which will include the ability to nominate an Attorney to decide about health and welfare issues (not just financial ones). This will be subject to some safeguards; attorneys will have to act 'in the best interest' of patients and their decisions will be open to challenge.

Although pre-printed statement forms are available from various organisations, statements do not have to be written in a specific format or, indeed, do not have to be written at all. Likewise, they do not have to be witnessed by a doctor or lawyer. However, the legality of statements which are not written or not witnessed might be difficult to prove at a future date. It is the patients' responsibility to ensure that any statement is available to any doctor who may be treating them in the future and that statements are regularly updated.

#### *If you are asked to witness an advance directive*

You are expected to have reassured yourself that the patient is aware of their current clinical condition and what course this is likely to take. They must know the circumstances which might lead to the

directive coming into force and the consequences of refusing any treatment in those circumstances. You must ensure that they are not acting under duress from someone else. It is expected that doctors who witness a directive will have satisfied themselves that patients were competent to make the directive at the time.

#### *If you are presented with an advance directive*

Read it carefully to determine if some or all of it may carry legal force. Even those parts which currently do not (e.g. the nomination of a surrogate decision maker) may help you to have someone to approach when deciding about the patient's 'best interest'. Examine the patient and satisfy yourself that they are incompetent and that their circumstances are as envisaged when the directive was drawn up. Speak to the witnesses and ensure that they are satisfied about the validity of the directive. Continue active treatment as usual while you check on the details of the directive.

#### *Specific problem areas with advance directives*

- Medical technology may develop between the time when the directive is made and when it comes into force. e.g. new treatments may become available for stroke or dementia. If this happens, then the circumstances envisaged by the patient are not those which have arisen and the directive is invalid.
- Doctors may have personal ethical problems implementing the patient's refusal of treatment. If this is the case, the doctor is obliged to pass the patient's care over to a colleague — but continue to provide care until this is organised.

### **Euthanasia and Assisted Suicide**

In announcing the Lord Chancellor's proposals to reform the law on mental incapacity, the British government took the opportunity to 'make absolutely clear its complete opposition to euthanasia, which is and will remain illegal'. The Netherlands has the greatest recent experience of euthanasia. There the practice is openly tolerated and may be legalised. Gomez has suggested that the Dutch have justified their tolerance of voluntary euthanasia as an extension of patient autonomy,

though the progressive vulnerability of terminally ill patients tends to erode their autonomy, and increase the influence of their doctors and carers. This vulnerability gives rise to concern about the ‘slippery slope’, which might lead from physician-assisted suicide to voluntary and then to involuntary euthanasia. The BMA has recently considered physician-assisted suicide, which it has rejected for the following reasons; it would alter the doctor–patient relationship, it would be intended to cause death, and medical involvement might result in euthanasia. While opposing assisted suicide, the BMA acknowledged that doctors should not be obliged to continue treatment when the burdens outweigh the benefits for the individual patient, and that autonomous refusals of treatment should be respected—even if they result in death.

## Case Histories

### Case 1

Mrs AD is 83 and has lived alone since the death of her husband five years ago. She was previously independent but has been housebound since she broke her hip last year. She has given up driving and now needs a frame for indoor mobility. After each of her many recent admissions, she has required increased home care. She was admitted this time with an acute anterior myocardial infarction. The geriatric registrar sees her and ensures that her clinical condition is stabilised. The doctor considers that CPR might have a reasonable chance of success but that the patient may consider her quality of life to be so poor that she may not want it. The doctor discusses her CPR preferences with her in detail, with a nurse present. She appears competent and clearly states that she does not want any life-saving treatment because she regards her quality of life over the past year as very poor. The doctor then writes a DNR order.

She remains stable overnight but the next day her daughter asks to see the consultant. The nurses say she is furious. The daughter says that it was wrong to discuss CPR with her mother without consulting her, since she has Power of Attorney and she intends to make an official complaint. She says the family do not want any further discussions of such matters with their mother, as these would be far too upsetting for her and therefore detrimental to

her health. She accuses the staff of trying to save NHS beds by not treating frail elderly patients.

### Discussion

The registrar’s actions seem reasonable; he presumably knows the patient from previous admissions or has seen her notes. Perhaps he should not have initiated discussions in A&E but waited until the following day when the patient was feeling better. After myocardial infarction, however, many cardiac arrests occur in the first few hours and decisions about thrombolysis and other interventions need to be made early.

The existence of a Power of Attorney only gives the daughter the ability to make decisions about her mother’s financial affairs (and this only comes into effect if her mother is incompetent). If the Lord Chancellor’s recent proposals on the subject become law, the scope of future Powers of Attorney may *include* health care decisions.

### Case 2

Mrs AS has had severe dementia for seven years and is admitted to hospital with broncho-pneumonia, septicæmia and renal failure. She is treated with antibiotics for five days but continues to deteriorate. When you see her, she has Cheyne-Stokes respiration, is hypotensive and anuric. The family agree with your decision to withdraw antibiotics but ask you about hydration and nutrition. What would you say?

### Discussion

The BMA guidance says that active treatment (including artificial nutrition and hydration) may be stopped in circumstances where the patient’s “imminent death is inevitable”. This would appear to be the case with Mrs AS, though it is often very difficult to determine when this point has been reached.

### Case 3

Mrs KS is 88 and has had a left total anterior circulation stroke. She has a dense right hemiplegia with aphasia with neglect of the right side. Comprehension seems poor. Initially she was unconscious and the GP kept her at home, thinking

she would die within a few days. However, she regained consciousness and was admitted to hospital. Two weeks later, she is conscious but there is no other evidence of recovery. She is unable to swallow. The decision not to resuscitate or treat with antibiotics is made in conjunction with the family but the nurses are pushing you to tube feed her; “you can’t let her starve to death”. What do you do?

### Discussion

Imminent death is not inevitable but quality of life seems unacceptably poor so active treatment has been decided against. Artificial nutrition and hydration is legally regarded as a medical treatment but without it she will inevitably die soon. The BMA has suggested additional safeguards for withdrawal or withholding of nutrition. If treatment is to be withheld, then a formal second clinical opinion should be sought and all such decisions should be open to regular clinical review. “Basic care” including comfort measures should continue to be provided; if the patient seems to be distressed by dehydration, then such “basic care” might involve artificial hydration.

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### SELF-ASSESSMENT QUESTIONS

- An 85-year-old man with delirium is refusing to allow his general practitioner to come into his house to examine him. The social worker decides to use the Mental Health Act 1983. Which section would be most appropriate for him to apply for?
  - Section 2
  - Section 3
  - Section 4
  - Section 5
  - Section 7
- When applying for the National Assistance Act 1948 Section 47, the patient
  - must have a mental impairment
  - should have reversible mental illness
  - should be physically incapacitated
  - requires financial protection.



**PART 2**

**CORE TOPICS**





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# 7. Urinary incontinence

**Nigel Smith**

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In this chapter I will focus on the pattern of urinary incontinence as it presents in the practice of geriatric medicine. (For information on nurse management and continence promotion services, see “Recommended reading”.)

## **DOES IT MATTER?**

Incontinence is given a lower priority than many other conditions. Few physicians report having a special interest in the unstable bladder. Even among geriatricians, the specialty of continence promotion is exceptional.

Maybe other conditions such as hypertension and diabetes mellitus deserve a higher profile in medical research and training. If incontinence was rare, inconsequential and untreatable, perhaps present attitudes could be justified, but is it?

## **IS INCONTINENCE RARE?**

Urinary incontinence is ubiquitous. Twenty percent of women aged 40–80 report regular urinary incontinence. There is no hospital ward, no rest home and no street that does not have its complement of incontinent inhabitants, be they young, middle aged or old. Incontinence is by far the commonest unasked-about symptom in routine medical history-taking.

## **DOES INCONTINENCE HAVE CONSEQUENCES?**

When present after femoral fracture or stroke, incontinence is associated with a higher mortality. This may be an indication that incontinent people are iller and have more coincident disease. An alternative explanation is that incontinence is

demoralising. Support for this can be drawn from verbatim reports of the views of patients with incontinence. Incontinence is associated with guilt, shame, embarrassment, withdrawal and low self-esteem. It seems likely that in hospital some incontinent patients avoid rehabilitation because of a fear that they might be incontinent.

*Practice Point: Incontinence is the commonest unasked-about symptom in medical history-taking.*

## **IS INCONTINENCE UNTREATABLE?**

Studies have shown that two-thirds of older people living at home can be greatly improved by simple interventions such as pelvic floor exercises, electro-stimulation, oestrogen, anti-cholinergic drugs and bladder training.

Among older women attending geriatric day hospital, about 20% can achieve dryness and almost two-thirds can be markedly improved with treatments such as these and adjustment of drugs or use of synthetic vasopressin (DDAVP).

*Incontinence is common, treatable, distressing and dangerous; can we afford to ignore it?*

Thirty years ago, peptic ulcers were treated in hospital by surgeons, but today, medical treatments predominate. This trend from surgery to medicine is reflected in many different specialties, such as oncology and nephrology. New drug treatments and non-invasive investigations are behind this change. Why is the bladder still regarded as surgical territory?

Let us examine medical treatments for the bladder.

### **Medical treatments in urology**

Unstable bladder

Oxybutynin, Tolterodine, Propiverine

Oestrogen  
 Pelvic floor exercises  
 Electrotherapy, biofeedback  
 Cognitive behavioural treatment  
 Hypnotherapy  
 Stress incontinence  
 Pelvic floor exercises  
 Cones, electrotherapy  
 Benign prostatic hyperplasia  
 anti-androgens and alpha-blockers  
 Prostate cancer  
 androgen blockade  
 Investigations  
 Flexible cystometry  
 Trans-abdominal ultrasound  
 Trans-rectal ultrasound  
 Urinary flowmeter, urodynamics  
 Prostatic biopsy

These and further developments could underpin the development of a new specialty of medical urology.

## WHAT ABOUT URETHRAL CATHETERS?

Urethral catheters occasionally prove useful in managing intractable retention or urinary incontinence in some older people. However, their effects and usefulness are rarely monitored and they can be dangerous.

Catheters frequently block, by-pass, provoke unstable contractions and become extruded. Common catheter problems and management strategies are shown in Table 1.

The median length of catheter life in hospital is less than one week. Where patients require repeated catheter insertion and removal, the risk of gram-negative bacteraemia is increased. The decision to introduce a urethral catheter could unleash the ‘catheter-death sequence’ even before medical staff have considered the use of antibiotics (Figure 1).

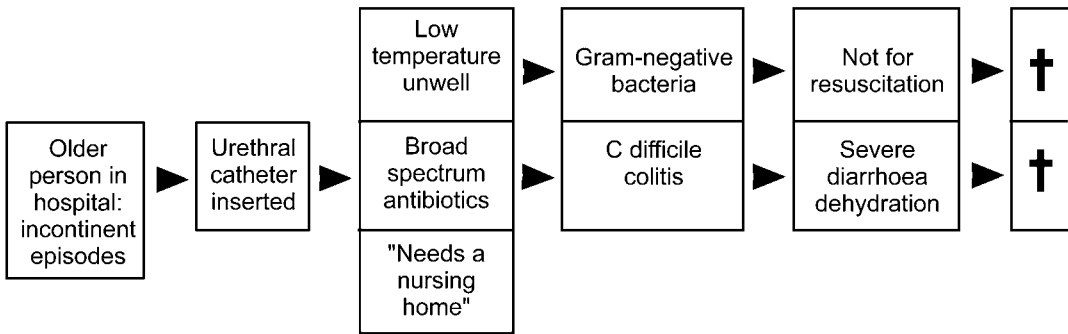
All catheterised patients develop a positive CSU after 28 days of catheterisation. In men, catheter-associated urethral discharge and prostatitis may progress to a painful and long-lasting epididymo-orchitis. In restless and disorientated patients, catheter manipulation by the patient is likely to promote urethral trauma and gram-negative bacteraemia.

It is vital to record the reason for long-term catheterisation, along with a plan of catheter management. Medical and nursing notes of catheterised patients should include:

- Date of catheter insertion
- Make, material size and batch number of catheter
- Indication for catheter (e.g. urinary retention, urinary incontinence or other)
- Planned duration of catheterisation, reason for medications (e.g. bladder wash-outs, oxybutynin)

**Table 1.** Common catheter problems and management strategies.

Catheter problem	Factors	Suggested management
Catheter blockage and by-pass	Dehydration and struvite formation	Increase oral fluids, cranberry juice, regular SubyG bladder instillation
Frank haematuria	Infection, erosive cystitis, prostatitis, trauma	CSU and antibiotic, remove catheter if possible, finasteride in men if prostatic hypertrophy suspected
Intermittent severe bladder pains, extrusion of catheter	Unstable contractions	Oxybutynin 2.5mg bd Smaller catheter size French Gauge (FG) 12–14
Catheter manipulation by patient	Dementia syndrome, apraxia	Use of a leg bag, remove catheter
Catheter difficult to remove, balloon won't deflate	Distortion of catheter tip, deterioration of latex	Ultrasound guided deflation of balloon by guidewire



**Figure 1.** Consequences of urethral catheter use: catheter-death sequence.

for bladder spasms), fluid and dietary recommendations and a date for catheter replacement.

The improved resolution of trans-abdominal ultrasound means that portable ultrasound can be used in resolving problems of catheter withdrawal. It may be possible to confirm whether the catheter balloon is still inflated. Deflation by bursting the balloon is not recommended because of the danger of leaving carcinogenic latex fragments in the bladder.

Key messages in catheter management:

- Use as few urethral catheters as possible
- Monitor the efficacy of catheters; do not put patients needlessly at risk
- Suspect infection in any sudden change of condition in catheterised patients

**DIAGNOSIS AND TREATMENT**

Imagine that you are the lead clinician for clinical effectiveness; how will you measure how well your hospital is detecting and treating incontinence in older people?

You might consider any of the following:

- The proportion of staff who have seen a patient recover continence
- The number of continence promotion techniques used in the previous month on each ward
- The proportion of catheterised patients, e.g. after acute stroke
- The proportion of incontinent patients who recover continence
- The proportion of incontinent patients on whom basic data are collected

- Random notes audit of the detection and management of incontinence

Let us take the basic data set; what would be the ideal baseline data to collect in every older person with incontinence?

You could choose ABCD: Assessment, Bladderscan, Chart and Dipstick.

**Assessment**

There are innumerable lower urinary tract symptoms which you could ask patients about:

*Lower urinary tract symptoms (LUTS)*

- |                          |                    |
|--------------------------|--------------------|
| frequency                | bladder pain       |
| urgency                  | urethral pain      |
| nocturia                 | poor stream        |
| incontinence             | small volumes      |
| post-micturition dribble | offensive urine    |
| stress incontinence      | dysuria            |
| dribbling incontinence   | passing stones     |
| incomplete emptying      | urethral discharge |
| intermittency            | haematuria         |
| hesitancy                | perineal pruritus  |
| double voiding           | strangury          |

Consequences of LUTS; handicap

- loss of libido
- avoidance of intercourse
- withdrawal, social isolation
- no exercise
- overeating

inability to travel by car/bus  
 limited choice of clothes  
 avoidance of new places  
 no holidays

*Activities which hospitalised incontinent patients may avoid*

physiotherapy  
 dressing  
 rehabilitation  
 seeing visitors

In practice, the four most important symptoms to ask about are *FUNI*: frequency, urgency, nocturia and incontinence:

- **Frequency:** Do you go to the toilet more often than other people of your age?
- **Urgency:** Do you have to rush if you need to go to the toilet?
- **Nocturia:** How many times are you up at night to use the toilet?
- **Incontinence:** Can you always get there in time? Do you sometimes have an accident?

Nocturia is a common and distressing complaint, which patients are usually glad to report and generally respond to accurately. By asking about it, you are clearly signposting the direction of your enquiry; patients are more likely to understand the final question about incontinence.

### Bladderscan

A post-voiding residual volume can now be easily detected by trans-abdominal ultrasound. It is important to exclude urinary retention before giving any treatment. A post-void residual volume of 300 ml or more is likely to be symptomatic and requires drainage. In men, it is important to recognise obstructive uropathy, when reversible renal failure complicates urinary retention. It is also possible for obstruction to occur with a small bladder, in which case the only indications may be symptoms, prostatic size and flow rate.

### Chart

Most patients can record their own chart. A three-day frequency-volume chart has become a standard

evaluation tool in clinical research. The chart also involves patients in their own treatment. If you discuss the chart with the patient you will find that patients are often surprised by what it shows, for instance that urgency and frequency are limited to certain times of day.

### Dipstick

Urinalysis will identify a range of conditions which cause urinary symptoms, such as glycosuria and urinary tract infection. Asymptomatic microscopic haematuria is commoner in older people. About 15% of older men have haematuria and the yield of investigating them is higher than at younger ages. About 5% may have cancer of the prostate or bladder. And about 40% may have important pathology such as renal calculi or glomerular disease. No relation has been found between the degree of haematuria and severity of underlying disease.

### Making a Diagnosis

Once these four items have been collected, it is possible to use a grid to direct appropriate symptomatic treatment. At least nine factors contribute to incontinence in women, each of which can be operationally defined (Figure 2).

Using the grid, it is possible to plan empirical treatment for older people with incontinence (Figure 3). The grid helps to ensure that common medical causes of symptoms are evaluated and treated. Thorough evaluation of urinary symptoms requires joint team working by a nurse and a doctor.

### Treatment

Urinary symptoms are likely to present in certain characteristic ways. It is helpful to recognise these in order to be able to offer prompt and appropriate treatment (Table 2).

#### 1. Older women with acute stroke

Incontinence has a pivotal role after stroke; among survivors, incontinence is associated with a longer hospital stay and higher risk of discharge to a rest

<p><b>Stress</b> Observed or reported leakage on coughing</p>	<p><b>Urge</b> Frequency, urgency and urge incontinence</p>	<p><b>Acontractility</b> Post-void residual volume &gt;100 ml, if symptomatic</p>
<p><b>Faecal impaction</b> Palpable stool on digital rectal examination, palpable descending colon</p>	<p><b>Nocturnal polyuria</b> &gt; one-third of daily output during the hours of sleep</p>	<p><b>Drugs</b> Medications such as frusemide are associated with urinary incontinence</p>
<p><b>Atrophic vaginitis</b> Any perineal inflammation, thin mucosa in women &gt;10 years post-menopause</p>	<p><b>Recurrent UTIs</b> More than one urinary tract infection in a year</p>	<p><b>Candida</b> Typical rash with itch or non-offensive discharge</p>

**Figure 2.** Urinary symptoms in women.

<p><b>Stress</b> Pelvic floor exercises, cones, biofeedback, electrotherapy</p>	<p><b>Urge</b> Increase fluid intake, reduce caffeine, bladder training, urge strategies, oxybutynin, pelvic floor exercises, oestrogen</p>	<p><b>Acontractility</b> Postural exercises, bladder stimulator, intermittent self-catheterisation</p>
<p><b>Faecal impaction</b> Enemas, suppositories and laxatives</p>	<p><b>Nocturnal polyuria</b> Exclude glycosuria, renal failure, detect LVF daytime diuretic, DDAVP</p>	<p><b>Drug side effects</b> Review medications, consider torasemide</p>
<p><b>Atrophic</b> Local oestrogen</p>	<p><b>Recurrent UTIs</b> Local oestrogen</p>	<p><b>Candida</b> Canesten cream and vaginal pessary</p>

**Figure 3.** Women: Interventions.

**Table 2.** Some common syndromes of lower urinary tract symptoms.

- 
1. Older women with acute stroke
  2. Older women with diabetes mellitus and nocturia
  3. Older men with Parkinson's disease
  4. Neurological causes of incontinence
  5. Older men with retention
  6. Older women with retention
  7. Women with cardiac failure who do not take their diuretics
  8. Women with stress incontinence
  9. Women with recurrent UTI's
- 

home or nursing home. Specific treatment to promote continence offers the prospect of increasing the proportion of patients who can be discharged to their own home.

Incontinence after stroke can be divided into three roughly equal groups: instability, retention and cognitive deficit. Patients with instability usually experience new urgency and frequency since the onset of the stroke. These patients commonly void on their return from the toilet and have incontinent episodes with complete bladder emptying.

The most effective treatment for the unstable bladder in stroke patients is prompted voiding. This involves prompting the patient to use the toilet when their chart predicts they would experience urinary incontinence. After shortening the intervals between voids to achieve dryness, the intervals are gradually lengthened to enable patients to go less frequently. Training the patients to exercise the pelvic floor may also help in maximising the success of treatment.

Success is dependent on the patient being able to toilet appropriately; that is, they void more than 50% of times when taken to the toilet by a nurse.

Additional strategies include increasing fluids; on no account ask older patients to reduce their fluid intake; our admission wards are already crowded with patients who are severely dehydrated; fluid restriction may affect perfusion of the kidneys and predispose to stroke and myocardial infarct.

Caffeine is a smooth muscle stimulant; some patients with an unstable bladder appear to be unusually sensitive to these effects; replacement of coffee, tea and cola with non-caffeine alternatives may improve symptoms.

Urge strategies are listed below in the table; the intention is to uncouple unstable contractions and bladder emptying.

Urge strategies which can be used to cope with the ‘urge wave’:

1. Stop what you are doing
2. Squeeze the pelvic floor muscles several times
3. Relax the rest of your body
4. Concentrate on overcoming the urgency
5. Wait for the urge to subside
6. Walk to the bathroom at a normal pace

If they have atrophic changes, such as redness and thinning of vaginal and perineal skin, oestrogen may reduce their urgency. Local oestrogen such as oestradiol (Vagifem) can be given vaginally in patients with no history of oestrogen-dependent tumour (such as breast cancer). Oxybutynin may help to reduce urgency and frequency, but is commonly complicated by retention and a dry mouth and should not be used in patients with glaucoma.

Patients in urinary retention present with nocturnal frequency, small volumes, infrequent voids, dribbling incontinence on standing. Very

rarely do they present with a tense palpable bladder and acute retention of urine. Intermittent catheterisation is the treatment of choice, which normally eliminates urinary symptoms such as frequency. Intermittent catheterisation may be needed for at least two weeks before volumes begin to fall and spontaneous urine output increases. Regular catheterisation can be discontinued if volumes are less than 300 ml and the patient is asymptomatic.

Patients with large strokes and aphasia, perceptual deficit, such as inattention, visual field deficit or drowsiness may be incontinent due to their neurological deficit. Treatment is the same as the management of the neurological deficit.

In addition, some anxious patients are inclined to call for the commode much more often than needed; patient reassurance, explanation and treatment of depression may be needed to settle these symptoms.

## 2. *Older women with diabetes mellitus and nocturia*

Nocturia is one of the least recognised and most distressing lower urinary tract symptoms, which occurs equally in men and women. In older people, increased nighttime urine production is by far the most likely cause. The main treatable causes are cardiac failure, dependent oedema and glycosuria. Ankle oedema causes nocturnal polyuria because when the patient lies down, oedema is reabsorbed into the circulation, increasing glomerular filtration. Glycosuria may be a result of poor diabetic control or low renal threshold for glucose.

Check the heart size on chest X-ray, record an ECG and check the past medical history for angina or myocardial infarct. Patients with any abnormality may benefit from a morning loop diuretic, such as frusemide.

Rarer causes of nocturnal polyuria include diabetic autonomic neuropathy, hypercalcaemia and advanced renal failure.

## 3. *Older men with Parkinson’s disease*

Men with Parkinson’s disease usually have reduced colonic transit time, which commonly causes severe recurrent constipation and faecal impaction. Treating the bowel symptoms may be the key to improving urinary symptoms. In addition, an

autonomic neuropathy may be associated with urinary retention or instability.

#### 4. *Neurological causes of incontinence*

Cervical myelopathy, progressive supra-nuclear palsy and lumbar radiculopathy may all present in older people and can be associated with urinary retention.

Normal pressure hydrocephalus is a crucial condition to recognise, as it is the only treatable cause of the syndrome of progressive gait disorder, cognitive change and urinary incontinence. Urinary symptoms range from self-neglect to urinary urgency and frequency. The gait becomes apraxic with patients reaching for support and experiencing “feet glued to the floor”. Typically patients have bilateral ankle clonus, with relative preservation of arm power and reflexes. They give answers that are appropriate but unusually slow, with significant psycho-motor delay. (See the chapter on gait disorders by Lee and George.)

A CT scan is indicated with a specific request to the neuro-radiologist: “could this patient have normal pressure hydrocephalus?” If there is doubt about the answer, involve a neurosurgeon.

#### 5. *Older men with retention*

Assessment of possible prostatic obstruction requires a digital rectal examination and PSA in addition to the post-void residual. High normal PSA results can be associated with benign prostatic hypertrophy. Additional evidence can be obtained from the urinary peak flow rate (<10 ml/s) and prostatic size on trans-rectal ultrasound.

All patients in this group who are catheterised should have a trial without catheter (TWOC). It may be helpful to prescribe tamsulosin slow release 5 mg once daily for 24 hours before attempting to remove the catheter. This increases the proportion of men who successfully manage without.

Patients who fail their TWOC can be re-catheterised and receive finasteride 5 mg daily, which blocks the formation of dihydroxytestosterone (DHT), the active hormone which maintains prostatic size. Over a period of three months, the reduction in prostatic size may allow a successful TWOC.

While it is correct to assume that retention in older men may be due to prostatic hypertrophy, acontractility is an equally likely possibility. In the

future, repeat prostatectomies will be replaced by medical therapy to reduce the prostatic size. In patients with lung disease or stroke anti-androgen agents such as finasteride are the treatment of choice. In men over 85, prostatic disease is less likely to be the cause of acute and chronic retention because of falling testosterone levels and an increasing prevalence of pelvic neuropathy. It is justified to assume that the cause is acontractility and to treat the patient with intermittent catheterisation.

#### 6. *Older women with retention*

Among older women it may be worth training patients to use postural exercises such as rocking backwards and forwards on the toilet after voiding, standing up and then sitting down in order to increase the degree of bladder emptying. The Valsalva manoeuvre is not recommended because it may exacerbate pelvic prolapse. An adapted vibrator, such as the Queen’s Square bladder stimulator, can be used to promote bladder emptying, and may help to reduce bladder volumes in women having intermittent catheterisation. Women most likely to respond are those with catheterised volumes of less than 600 ml and preserved perineal sensation.

Intermittent catheterisation is a highly effective and under-used treatment for retention. It has the advantages of avoiding a foreign body in the bladder and removing the urine substrate for infection. Although ascending infection can occur at catheterisation, the removal of stagnant urine plays a part in reducing the infection risk. Intermittent catheterisation is most useful for retention of sudden onset after a stroke or femoral fracture, in which case its short-term use for two to three weeks can contribute to active involvement of the patient in rehabilitation during a critical phase for recovery.

#### 7. *Women with cardiac failure who do not take their diuretics*

Patients with heart failure commonly do not comply with their treatment, sometimes requiring repeated admissions as a result. The main reason is that loop diuretics precipitate urge incontinence. These patients seem to be exquisitely sensitive to urinary flow rate, so that they only experience an unstable bladder when urinary flow rates are in the region of 60 ml/hour. They recognise that if they



take their frusemide, urge incontinence results, preventing them from shopping or going out.

Torsemide is an alternative loop diuretic with a slow action which can be substituted in patients who require 40–80 mg of frusemide. 5 mg of torsemide is equivalent to 40 mg of frusemide. However, torsemide is more expensive.

#### 8. *Women with stress incontinence*

Even when stress incontinence occurs in women in their 90s, a training effect of pelvic floor exercises can be shown. Exercises remain the most effective first-line treatment. Various biofeedback and electrotherapy devices are now available for well-motivated patients, though these have not been shown to improve outcome.

#### 9. *Women with recurrent UTI's*

Recurrent UTI should always raise the suspicion of atrophic vaginitis. The high pH of the urethra and vagina is associated with a reduced resistance to infection. Oestrogen has the effect of reducing the inflammation which allows spread of bacteria to the circulation and lowering the pH to form a more effective barrier to bacterial spread in the urethra. Local oestradiol can be administered by applicator.

### SUMMARY

Urinary incontinence is a thought-provoking, treatable cause of enormous misery in older patients. Trainees who develop particular skill and experience in treating incontinence can discover how rewarding it is and how supremely grateful patients are.

### RECOMMENDED READING

- Ashworth, P.D. and Hagan, M.T. (1993) The meaning of incontinence: a qualitative study of non-geriatric urinary incontinence sufferers. *J. Adv. Nurs.*, **18**: 1415–23.
- Jeter, K.F., Faller, N. and Norton, C. (1990) *Nursing for continence*. WB Saunders, London.
- Morse, R.E., Lavanchy, E. and Adenwalla, F. (1999) Improving urinary continence in elderly community-dwelling women, the experience of a day hospital clinic (abstract). *Age Ageing*, **28**(suppl 2), 20.
- O'Brien, J., Austin, M., Sethi, P. and O'Boyle, P. (1991) Urinary incontinence: prevalence, need for treatment and effectiveness of intervention by nurse. *Brit. Med. J.*, **303**: 1308–12.

### SELF-ASSESSMENT QUESTIONS

*True or false?*

1. In a patient with an after acute stroke and an unstable bladder:
  - a. A post-void residual volume of 300ml is a contra-indication for the use of oxybutynin.
  - b. Pelvic floor exercises are the treatment of choice.
  - c. Fluid restriction is indicated to reduce incontinence.
  - d. Prompted voiding is ineffective.
2. Urinary retention
  - a. Is detectable by clinical examination
  - b. Is due to prostatic hypertrophy in men
  - c. May be relieved by intermittent catheterisation
  - d. Is rare in women

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# 8. Falls and instability

Jacqueline C.T. Close

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*“Old age starts with the first fall and death comes with the second”  
(Love in the Time of Cholera, p.313—  
Gabriel Garcia Marquez)*

## INTRODUCTION

Falls are one of the ‘geriatric giants’, generating diagnostic and rehabilitative dilemmas, and involving many specialities and disciplines. In a specialty committed to interdisciplinary working, falls and injury prevention are a sizeable challenge.

Falls can result in death and disability and are commonly associated with a decline in physical function and ultimately encroach on independence and autonomy.

When contemplating any falls prevention strategy it is important to be clear about the ultimate aim, and how one should identify people most likely to benefit. The benefits of population screening are unproven and the over-75s GP check has not been adequately evaluated. Secondary prevention and targeted high-risk screening are likely to be the most productive and cost-effective approaches. Given the multifactorial nature of falls, interdisciplinary working is essential if one is to provide an effective quality service.

This chapter provides an overview of the epidemiology, causes and consequences of falls. It gives a structured approach to the investigation and management of falls and highlights successful intervention/prevention strategies. It is not all-encompassing or designed to be prescriptive. A recommended reading list covers many of the areas identified in the chapter.

## PHYSIOLOGY OF BALANCE

The human body is inherently unstable, with a small base relative to its height. Therefore maintenance of the upright posture is dependent upon a series of complex finely tuned mechanisms. Sensory input from visual and vestibular pathways, muscle spindles and joint proprioceptors is channelled centrally to the brain, where it is rapidly processed and results in a coordinated motor response.

A fall will occur when a person’s pattern of movement is distorted by an unexpected or unperceived hazard, the body is displaced beyond its support base and the corrective mechanism is delayed or inaccurate.

### Vision

Vision is the most important sensory organ in the maintenance of the upright posture and is also the sense to which many abnormalities lend themselves to correction if detected. Misinterpretation of spatial information such as the nature of ground surfaces or misjudgement of distance can occur with age-related deficits in acuity, restriction of the visual field, increased susceptibility to glare and poorer depth perception and thus can impair ability to judge an imminent fall.

### Proprioception

The proprioceptive system contributes to stability, particularly during changes of position, during

walking or on uneven surfaces and is of particular importance when other senses are impaired. Whilst age-related changes in the peripheral nerves have not been conclusively identified, peripheral neuropathy (such as that found in diabetes mellitus and vitamin B12 deficiency) and proprioceptive abnormalities are risk factors for falls. Cervical spine mechanoreceptors contribute to static postural sensation and to awareness of head and neck movements. Degeneration of the cervical spine from cervical spondylosis, injury or arthritis can disturb postural control and predispose people to falls because of damage to mechanoreceptors in the apophyseal joints.

### **Vestibular Function**

Vestibular function is probably less important in the maintenance of posture, although vestibular abnormalities are an important cause of dizziness. Medications affecting vestibular function include the aminoglycosides, aspirin, frusemide and quinine.

### **Central processing**

On reaching the brain, sensory information is channelled to various parts including the cerebrum, cerebellum, basal ganglia and brain stem. Problems can be experienced in the central processing of information despite normal sensory input and normal effector organ function.

Changes in gait are not necessarily part of ageing and it is possible to find older individuals with a normal gait pattern, suggesting that gait abnormalities are associated with underlying pathology.

Pyramidal tract disorders affect the patterning of gait and may weaken the supporting limbs. Patients who have had a stroke have an increased propensity to fall. Alzheimer's disease is also associated with altered gait and an increased risk of falls.

Extrapyramidal disorders such as Parkinson's disease lead to alteration in the sequencing of pacing and may impair speed of correction after displacement. Stride to stride variability is an independent predictor of falls. Cerebellar disorders can create grossly abnormal stepping patterns and impair corrective mechanisms.

The hind brain is particularly prone to alteration in perfusion and a momentary disturbance may

impair muscle tone long enough for a fall to occur. In addition, impaired baroreceptor function may dampen the physiological response to postural change and precipitate a fall secondary to a perfusion deficit. Postural hypotension occurs in about 10% of people aged 65 years and above living at home.

### **Effector Response**

Once the received information has been processed centrally, signals are relayed via the spinal cord and peripheral nerves to limb and trunk muscles whereby continuous muscular correction permits one to remain upright.

Slower walking speeds and shorter step length have been reported in healthy elderly people but gait changes are more apparent in those who fall and abnormalities in balance and gait have been repeatedly associated with falling.

Diseases of weight-bearing joints, such as arthritis, may contribute to error in foot placement, whilst distorted or painful feet and poorly fitting shoes may give misleading information on the nature of ground contact and produce errors in the swing phase of walking, all increasing the likelihood of a fall when challenges to balance are posed during ordinary activity or by environmental hazards.

In summary, maintenance of the upright posture is a complex task involving many systems, some of which are affected by ageing whilst all are susceptible to changes induced by disease. Every day we face a continuum of challenges to balance posed by environmental hazards, ordinary activities or by movements that lead to loss of control of centre of mass. When the demands on postural control are greater than the person's capability, a fall will occur.

## **EPIDEMIOLOGY AND NATIONAL STATISTICS**

The total number of falls in the older population is unknown and will remain elusive as most falls do not come to the attention of any medical service. Incidence figures for falls in the community are largely dependent on accurate recall of events and about one-third of the population aged 65 yrs and

above fall each year. This figure rises to 50% for women aged 85 yrs. Fifty per cent of elderly people who fall do so repeatedly.

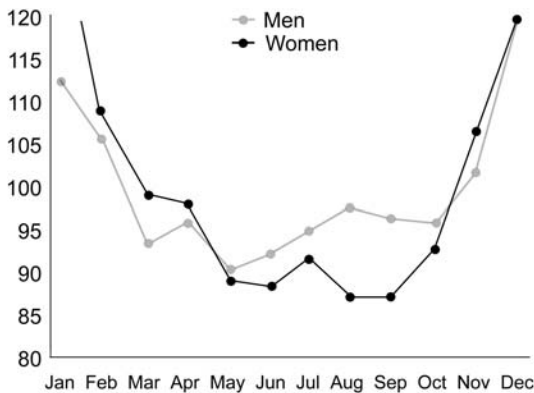
Older women fall more often than older men and even after allowing for physical and social factors, women are 1.5 times more likely to fall than men. Women living alone are at greater risk of falling and being injured. Frequency of social interaction is inversely related to reported falls.

The incidence of falls and fall-related injuries in institutions is higher than at home, with the mean fall incidence estimated at 1.5 falls/bed/year. The incidence is higher after relocation to a new facility, where the rate of falls can double and then return to baseline after three months.

Most falls in older people occur within the usual place of residence and in the most commonly used rooms. Not surprisingly, most falls occur at the time of maximal activity, with only 1/5 occurring at night.

However, the external environment with its fast-moving vehicles, irregular ground surfaces and flashing lights is often unsafe. Of the many environmental factors which predispose older people to falls, problems in foot-ground contact are especially important. Such problems arise from poorly fitting shoes, irregular ground surfaces, and low slip resistance between the foot and surface.

The ambient temperature may lead to a seasonal variation in the incidence of falls. People tend to hurry more in colder weather and mild hypothermia and slowed responses are more common. People tend to be less active in winter, the hours of daylight shorter and vitamin D deficiency more likely. There appears to be a seasonal variation in deaths from accidental falls (Figure 1).



**Figure 1.** Deaths from accidental falls—annualised mortality rates 1993–97. Office of National Statistics.

**Mortality**

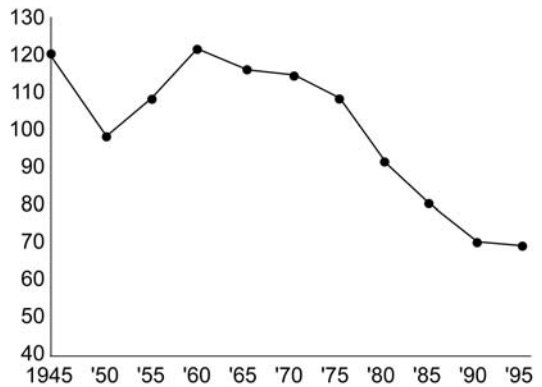
Falls are the leading cause of accidental death in people aged 75 yrs and above. In 1994, 84% of reported deaths from accidental falls in England and Wales were in people aged 65 yrs and above. About 2.2% of injurious falls are fatal and almost 50% of men and women who die do so as a result of a hip fracture.

Official published data on death rates due to falls only include deaths within 30 days of the accident and therefore reveal very little about deaths which occur as a result of the fall after this time. Data on fatal accidents in England and Wales are recorded by the Office of National Statistics (ONS), with mortality statistics for injury and poisoning (“external causes”) reported annually. Deaths are coded according to the Ninth Revision of the International Classification of Diseases (ICD9) and are assigned code numbers in the range E800–E999. The ONS reports the absolute number of accidental deaths and age-specific death rates. Accurate coding is dependent on good note keeping by doctors and punctilious attention to detail on the death certificate.

Figure 2 illustrates the number of deaths per million of the population from accidental falls over the past 50 yrs. Whilst it may appear that mortality rates for all ages are steadily reducing, deaths from accidental falls in older people are not falling.

**Morbidity**

Whilst ONS holds relatively accurate mortality statistics, it has no information on morbidity caused



**Figure 2.** Deaths per million population from Accidental Falls over the past 50 years (E880–E888). Office of National Statistics.

**Table 1.** Length of time a fall affected normal activities: by sex and age, 1995–1996 (Source: Health Survey for England, Department of Health).

England	50–59	60–69	70–79	80+	Percentages All 50+
<b>Men</b>					
Did not affect daily activities	30	33	44	43	37
Less than 1 day	2	—	2	4	2
1 day but less than 1 week	7	12	2	4	7
1 week–1 month	39	29	27	9	29
1–2 months	13	14	10	17	13
>3 months	9	12	15	22	13
<b>Women</b>					
Did not affect daily activities	25	32	30	32	30
Less than 1 day	1	1	2	—	1
1 day but less than 1 week	9	7	11	11	10
1 week – 1 month	33	28	24	23	27
1–2 months	20	17	21	16	19
>3 months	12	15	11	19	14

by falls and accidents. Data on home and leisure accidents are collected by the Department of Trade and Industry's Home Accident Surveillance System (HASS). Eighteen Accident and Emergency Units across the UK collect information on all home and leisure accidents presenting to their respective departments. Accidents are classified according to their causes, circumstances and outcome. Case records are entered in the Home and Leisure Accident Database, from which the proportions and national estimates can be calculated. HASS only collects information on accidents that present to A&E and excludes road traffic accidents, which are recorded separately by the Department of Transport. The data provide no measure of injury severity and focus on the events at and around the time of the accident.

## CONSEQUENCES

Table 1 illustrates the problems faced by older people who fall. Thirty-seven per cent of people aged 80 yrs and above who fall, have normal activities affected for at least a month after a fall and 21% are affected for at least 3 months. The impact on healthy active life expectancy is thus substantial.

Long lies on the floor are associated with increased mortality and morbidity, and up to 50% of

those who lie on the floor for an hour or longer die within 6 months, even if there is no direct physical injury from the fall. In addition to the increased mortality, long lies on the floor and inability to get up after a fall are associated with important morbidity. Patients are at risk of dehydration, pressure sores, pneumonia and rhabdomyolysis.

Falls are a contributing factor in up to 40% of admissions to nursing homes. Falls occurring in nursing home residents are associated with increased mortality.

Injuries requiring treatment at an A&E department following a fall at home affect 14/1000 people over 60 and falls account for up to 20% of all admissions to hospital in people aged 65 and above.

Up to 10% of falls result in serious injury and up to 5% in a fracture. Whilst the proportion of falls which result in fracture is low, the absolute number of older people who suffer a fracture is high and this places heavy demands on health care systems. The most commonly encountered low trauma fractures are wrist, humerus, pelvis and hip. A single fracture is a strong predictor of future fracture risk.

## Hip Fracture

Hip fracture is one of the most serious consequences of a fall and is associated with high

rates of mortality and morbidity. The incidence of hip fracture is higher in institutions with rates of up to 81/1000 person years. Hip fractures are associated with a 33% one-year mortality rate and this may well be an underestimate, given the undercertification of proximal femoral fracture as a predisposing cause of death.

## Fear

Fear of falling is a commonly identified although poorly defined phenomenon in elderly people and heads the list of fears reported in those living at home.

For those who do not sustain any major physical injury as a result of a fall, the psychological trauma, or fear of falling itself, may lead to self-imposed reduction in physical activity beyond that due directly to physical disability or to an injury resulting from a fall. Up to 50% of people who are fearful of falling restrict or eliminate social and physical activities because of that fear.

## CAUSES

A fall occurs as a result of a dynamic interaction between intrinsic and extrinsic factors. It is necessary to consider both components in any intervention strategy.

Over 200 risk factors have been identified as being associated with an increased risk of falls. To produce an exhaustive list is of limited use but a helpful 'aide-mémoire' comes in the acronym DAME:

- D Drugs and alcohol
- A Age-related physiological change
- M Medical problems
- E Environment

Drugs commonly associated with an increased risk of falling include the sedative hypnotics, especially benzodiazepines, antidepressants and antipsychotics. Other drugs include the antihypertensive agents through their effect on postural blood pressure. Polypharmacy is an independent risk factor for falls.

Age-related physiological changes involve changes in vision, postural sway, balance and gait speed. There is an alteration in neuroprotective

reflexes and corrective responses to a perturbation in balance, increasing one's likelihood of a fall.

Falls are a common manifestation of underlying pathology and many acute medical problems in older people present with a fall. Other more long-term problems increasing one's propensity to fall include cerebrovascular disease, Parkinson's disease and degenerative joint disease.

It is imperative to consider the surrounding environment when attributing a cause to a fall. Risk factors in the environment include loose rugs and mats, poor lighting, cluttered rooms and steep stairs.

## ASSESSMENT OF THE OLDER PERSON WHO FALLS

### History

A detailed history of the events surrounding a fall is essential. Corroborative information should be sought in those with limited recollection of the incident. Anecdotally, older people need to rationalise why they fell and many will report a slip or trip yet are unable to recall exactly what it was that caused the slip or trip.

Points to consider include:

- Does the individual have amnesia for the event?
- Where and at what time did the fall happen?
- What was the individual doing at the time of the fall?
- If it was a slip or trip, clarify exactly what caused it.
- Was the fall preceded by any dizziness or palpitations?
- Does the individual remember losing consciousness?
- Was the individual able to get off the floor after the fall?
- Does the pattern of injury described and/or visualised fit with the details of the fall?
- What injuries were sustained as a result of the fall?
- How often has that person fallen in the last year?

In addition to a detailed falls history, it is important to get an accurate medical and drug history as well as functional ability before and after the fall and sociodemographic data.

**Table 2.** Examination findings which might contribute to an individual's risk of falling.

<u>General</u>	<u>Cardiovascular</u>
Poor footwear and footcare	Brady or tachyarrhythmias
Impaired visual acuity	Postural hypotension
Inappropriate use of walking aids	Unexplained murmurs
“Stops walking when talking”	Carotid bruits
Poor nutritional status	
<u>Neurological</u>	<u>Musculoskeletal</u>
Abnormal gait	Reduced range of movement
Impaired visual fields	Unstable knee joints
Cataract formation or macular degeneration	Pain in joints on movement
Altered tone (cog-wheeling, clasp knife etc.)	<u>Cognition and affect</u>
Deficits in power	Impaired cognition
Peripheral neuropathy	Low mood
Proximal myopathy	

## Examination

The examination should be the same as one would expect in an ordinary clinic assessment, with a complete cardiovascular, respiratory, abdominal and neurological system examination. Table 2 highlights the more common and important examination findings that may provide some insight into the cause of an individual's fall.

## INVESTIGATIONS

Investigation of an older person who falls should be tailored to individual need and directed to the outcome of the clinical history and examination.

A full blood count, renal, liver, thyroid and bone profile tends to be part of a comprehensive geriatric assessment but it is rare for abnormal results to be directly contributory to a fall. Exceptions might include undetected hypothyroidism or vitamin D deficiency.

Where the cause of a fall is unclear or there is associated dizziness, palpitations or loss of consciousness, then further cardiovascular investigation is warranted. A routine ECG might be followed up by a 24-hr ECG and carotid sinus studies (see below). CT and an EEG might be considered if epilepsy is a possible diagnosis.

## Carotid Sinus Syndrome

Carotid sinus syndrome can be defined as an abnormal haemodynamic response to massage of the carotid sinus. It is seen more commonly in old age and is characterised clinically by unexplained dizziness and/or syncope. There are three subtypes of the carotid sinus syndrome—cardioinhibitory, vasodepressor and mixed. The pathophysiology of the carotid sinus syndrome is far from clear and any plausible mechanism must adequately explain the clinically observed sub-types of the syndrome.

### Sub-types

The cardioinhibitory response is characterised by a period of more than 3 seconds of asystole following carotid sinus massage. This is usually seen within a few seconds of onset of massage and tends to be self-limiting, although atropine should be readily accessible.

The vasodepressor response is identified by a fall in systolic blood pressure of greater than 50 mmHg in the absence of significant bradycardia. The mixed type is a combination of both responses. The drop in blood pressure is seen within seconds of massage and as such is virtually impossible to detect without the use of continuous non-invasive blood pressure monitoring. Where there is a vasodepressor response

in the presence of significant bradycardia, the bradycardia should be eliminated by intravenous atropine and the massage repeated.

### *Method of testing*

Any individual (particularly the elderly) who has an unexplained episode of loss of consciousness, dizziness or fall should be considered for investigation. Patients with cerebrovascular disease should not be studied unless there is good clinical indication to do so. Those with carotid artery bruits should undergo carotid Dopplers before undertaking the study to exclude significant carotid artery disease, which in itself is an exclusion criteria for the study. A recent history of myocardial infarction is also an exclusion criterion due to increased amounts of circulating catecholamines occurring at and around the time of the infarct. A detailed drug history should be recorded as certain drugs influence vagal activity, e.g. digoxin, methyl dopa and  $\beta$ -blockers.

Patients are initially tested in the supine position with the neck slightly extended. Massage is applied over the point of maximal carotid impulse, medial to the sternomastoid muscle at the level of the upper border of the thyroid cartilage. Firm longitudinal massage is applied for 5 seconds, initially on the right, and after a 60-second interval repeated on the left. The procedure is then repeated with the patient tilted upright to 70°.

Whilst most hospitals will have facilities to undertake 24 hr ECG monitoring, not all will have either a tilt table or Finapres/Portapres to undertake carotid sinus testing. In this case one has to compromise and use a cardiac monitor which will permit detection of the cardio-inhibitory form of the syndrome. If the patient becomes symptomatic during the procedure but does not exhibit a cardio-inhibitory response, then referral to a centre with appropriate monitoring facilities to detect the vasodepressor response is recommended.

### *Treatment*

Symptomatic carotid sinus syndrome of the cardioinhibitory sub-type should be treated with dual chamber pacing. Atrial pacing is contraindicated in view of the high incidence of atrioventricular block during baroreflex stimulation, whilst ventricular pacing fails to

control symptoms in many patients due to either aggravation of coexisting vasodepression or the development of the pacemaker syndrome.

Treatment of the vasodepressor response has proved less successful and almost certainly reflects a limited understanding of the underlying mechanisms producing the response. A review of prescribed medications is the first step. Ephedrine can be effective but is poorly tolerated. Fludrocortisone, and more recently midodrine (an  $\alpha$  agonist), have been used with some success. Surgical denervation remains a therapeutic option for symptomatic vasodepression resistant to other forms of therapy but it is of course not without risk and is rarely undertaken.

## **MANAGEMENT**

At the end of the assessment one may or may not be able to ascribe a primary cause to a fall. More often than not this will be difficult, but having taken a careful history and examination one will have a list of risk factors which may be contributing to an individual's risk of falling. Some of these factors will be remediable or modifiable and it is these factors on which one should concentrate.

Whilst there may be medical risk factors which one can modify, many of the problems identified will be best addressed by the professions allied to medicine and in particular, physiotherapists and occupational therapists. Close liaison with these specialties is important in ensuring an all-encompassing assessment of the older individual who falls. Other key professionals include GPs, district nurses and health visitors, opticians, chiropodists, orthotists and dieticians. The key to successful management is in tailoring to the needs of the individual and the following examples illustrate this.

### **Clinical Cases**

#### *Case 1*

An 85-year-old woman falls getting onto a bus with her shopping. She sustains a head injury and right shoulder injury. On review in A&E there are no fractures or lacerations and the woman is discharged home with analgesia.



**Clinic**

Two weeks later she is seen in the Falls Clinic where it is apparent that she has persistent pain in her shoulder and reduced range of movement. More importantly, she is now struggling to look after her disabled daughter.

**Management**

Her analgesia was reviewed and a referral made for physiotherapy. Social services were contacted and help with personal care arranged for both the patient and her daughter.

**Case 2**

A 91-year-old man presents to A&E having had a fall at home. He complains of a swelling in the L groin which appears to be enlarged lymph nodes. An urgent referral is made for him to be seen in the haematology clinic where a high-grade non-Hodgkin's lymphoma is diagnosed. Because of the initial presentation to A&E with a fall he is also seen in the Falls Clinic.

**Clinic**

On walking into the clinic it is immediately apparent that he has a left-sided foot drop. Further examination also reveals femoral nerve involvement from the lymph nodes in the groin.

**Management**

In view of the foot drop, an EMG was requested and the gentleman referred to orthotics. The EMG was suggestive of nerve root problems related to his lymphoma. Given the risk of further falls, particularly with impending chemotherapy, he was informed of the availability of hip protectors and how to obtain them (not routinely available on NHS).

**Case 3**

An 82-year-old woman is referred by her GP with recurrent falls. She has a history of degenerative joint disease and is awaiting a left knee replacement. Her falls occur because her knee gives way. As a result of the falls she has become less mobile and developed ankle oedema for which she was prescribed diuretics.

**Clinic**

Examination in clinic confirms an unstable left knee associated with a significant degree of pain. She smells of urine and when confronted she admits that since starting the diuretics she has had difficulty getting to the toilet in time.

**Management**

Her analgesia was reviewed and the diuretic discontinued. Advice was given regarding elevation of the legs and she was provided with support stockings. A referral was made to orthotics for a knee brace and an occupational therapist home visit arranged. There were several areas of concern around the home. She was given a perching stool, a commode by the bed and a 'helping hand'. Her risk of falling was thus reduced pending surgery.

**Case 4**

A 68-year-old man is referred to the Falls Clinic following several attendances at A&E with unexplained falls. He is unclear about the events surrounding each fall but his wife, who has witnessed one such incident, reports a transient loss of consciousness. Four 24 hr ECGs have been reported as normal.

**Clinic**

There were no clinical signs. Because of the unexplained nature of these falls he had tilt table testing with carotid sinus massage. Massage of his right carotid sinus with head-up tilt produced a 4-second period of asystole accompanied by syncope.

**Management**

He was referred for insertion of a dual chamber pacemaker and has had no further syncopal episodes.

**Role of Professions other than Medicine**

*"Better pin the carpet — do!*

*Lest the surgeon will be pinning you!!!"*

Danish senior citizen

To optimise outcome in the prevention of falls, physicians should not work in isolation. They are part of a team and it is important to recognise the skills and attributes brought to that team by professions allied to medicine. A Falls Clinic should have access to support from physiotherapy and occupational therapy. Physiotherapy may be required for specific injuries but there is also increasing evidence that exercise programmes tailored to the individual can reduce the incidence of falls. There is little evidence that occupational therapy on its own can alter outcome of falls and

injury, but assessment of the home and surrounding environment is an important component of a comprehensive assessment of the older person at risk of falls. Some will argue that all patients attending a Falls Clinic should be seen by a physiotherapist and occupational therapist. My own feeling is that this is not realistic, practical, or likely to be cost-effective and most hospitals do not have access to this level of input from therapy services.

The role of the Health Visitor is uncertain but they may well be key to identifying high-risk individuals at home. The over-75s check is an opportunity to screen for risk factors for falls but this check is neither standardised nor consistently carried out.

### **Successful Intervention/Prevention Strategies**

Tables 3–5 serve to highlight some of the more successful falls prevention/intervention strategies that have been published in the past decade.

### **Falls in Hospitals—Legal Aspects**

The prevention of falls in hospital is difficult both from the clinical and legal viewpoint. Acutely ill and confused patients are at high risk of falling and require a level of supervision that is not always possible on a general medical ward. Physical and chemical restraints should be avoided and in the USA, the removal of physical and chemical restraints has not led to an increase in the number of falls either in hospitals or institutions. Cot sides merely increase the risk of a fracture by adding an extra foot to the height of a fall!

It is possible, using a risk assessment tool (STRATIFY), to predict those hospital patients who are at an increased risk of falling. However, what has proved elusive is a successful intervention strategy to prevent those identified as high risk for going on to fall.

When a fall occurs on a ward, the patient is assessed by a nurse and an incident form completed. The doctor is informed of the fall and is required to review the patient before completion of the form. This form is used by Health and Safety to monitor the incidence of accidents and falls within a Trust. Accident policies are devised within

individual Trusts and are not usually comparable between Trusts. Currently, there are no national standards or benchmarks against which the Health and Safety Executive (a national enforcing authority) can audit performance. The internal investigation of a fall is not a legal necessity. With the advent of Clinical Governance and Clinical Risk Management this is likely to change.

### **Hip Protectors**

Hip fracture is one of the most serious consequences of a fall and there are over 60,000 new hip fractures in England and Wales each year, occupying 25% of all orthopaedic beds. Ninety per cent of hip fractures in older people result from a fall and most appear to be related to trauma near the hip.

Hip protectors are designed to reduce the chances of a hip fracture in the event of an impact onto the greater trochanter. Whilst energy absorption and inflatable airbags have been considered, it is the energy shunting pad that has undergone the most extensive development and appears to offer the most in terms of fracture reduction.

Energy shunting systems function by increasing impact area and reducing peak forces by leading energy away from the greater trochanter but in addition have an energy absorption capacity. Hip protectors consists of a polymer cup surrounded by a polymer foam that is anatomically shaped to incorporate an excavation for the greater trochanter. The pad is then fixed into an undergarment.

There is evidence from randomised controlled trials that hip protectors are effective in reducing hip fractures in nursing homes, despite low compliance rates. Problems influencing compliance include poor fitting, weight of the protectors and difficulty toileting. Many of these problems are being addressed but the issue of compliance is likely to determine the success or failure of the garment. What is not clear is who is most likely to benefit from wearing hip protectors and whether those most likely to benefit are those most likely to comply.

### **CONCLUSIONS**

Falls have long been accepted as a normal accompaniment of old age both by elderly people

**Table 3.** Intervention strategies incorporating medical component.

Study	Setting <sup>1</sup>	Interventions	Outcome	Author	Journal	Year
<sup>2</sup> RCT Post fall assessment N=160 ambulatory residents	RH	I: Physical exam and environmental assessment + referrals where needed C: Usual care	2 yr follow-up. 26% fewer hospitalisations (p<0.05), 52% fewer hospital days (p<0.01), 9% fewer falls—not significant. 17% fewer deaths	Rubenstein USA	<i>Ann. Int. Med.</i>	1990
<sup>2</sup> RCT to assess benefit of regular surveillance of older people at home Age: 75+, N=539	C	Regular surveillance by volunteers administering questionnaire. Increase in score led to GP referral	3 yr follow-up. Intervention group—more hospital admissions but control group had 33% more days in institutions. Significant difference in number of falls reported at the final interview (p<0.05).	Carpenter UK	<i>BMJ</i>	1990
<sup>2</sup> RCT Multifactorial risk factor abatement strategy Age: 70+ N=301	C	I: Nurse assessed participants for risk factors and targeted interventions accordingly. Therapist gave home exercise routines C: Friendly visits	1 yr follow-up. Fewer falls in intervention group: 35% vs. 47% (p=0.04). Also significant reduction in risk factors at reassessment, e.g. medications, balance impairment, gait impairment and toilet transfer skills.	Tinetti USA	<i>NEJM</i>	1994
<sup>2</sup> RCT of consultation service to reduce falls in nursing homes N=482	NH	I: Structured individual assessment with advice on prescribing, environmental concerns and transfer and ambulation C: Usual care	1 yr follow-up. Significant difference in mean proportion of recurrent fallers but not in injurious falls. Those that benefited most were those with history of falls	Ray USA	<i>JAMA</i>	1997
<sup>2</sup> RCT Structured interdisciplinary assessment A&E. Age: 65+, N=397	C	I: Medical assessment by geriatrician in Day Hospital followed by OT home assessment C: Usual care	1 year follow-up. Intervention group: significantly reduced risk of falls, recurrent falls and preservation of function	Close UK	<i>Lancet</i>	1999
<sup>2</sup> RCT; to assess effectiveness of psycho- tropic withdrawal and home-based exercise Age: 65+, N=93	C	I1: Gradual withdrawal of psychotropic medication I2: Home-based exercise programme	44 week follow-up. Fewer falls in medication withdrawal group (0.34; 95% CI 0.16–0.74) No significant reduction in falls in the exercise group	Campbell NZ	<i>JAGS</i>	1999

<sup>1</sup>Settings; C: Community, NH: Nursing Home, RH: Residential Home, H: Hospital.

<sup>2</sup>Included in Tables 4 and/or 5 as appropriate.

**Table 4.** Intervention strategies focusing on exercise and balance.

Study	Setting <sup>1</sup>	Interventions	Outcome	Author	Journal	Year
<sup>2</sup> RCT Multifactorial risk factor abatement strategy	C	See Table 3	See Table 3	Tinetti	<i>NEJM</i>	1994
FICSIT meta analysis 7 separate RCTs all with exercise element	2 NH 5 C	10–36 weeks of exercise—different programmes in each centre. 2–4 yr follow-up	Subjects assigned to an exercise intervention were less likely to fall. No exercise component was significant for injurious falls.	Province USA	<i>JAMA</i>	1995
RCT to evaluate the effect of Tai Chi Age: 70+ N=200	C	1: Tai Chi 2: Conventional balance training 3: Education	4-month follow-up Significant reduction (45%) in multiple falls in Tai Chi group. Also fear of falling reduced.	Wolf	<i>JAGS</i> USA	1996
RCT of effect of individually tailored home exercise programme Women aged 80+ N=233	C	1: Individually tailored program of strength and balance training in the home. Four one-hour sessions with physiotherapist in the first two months of the study C: Social visits	1 yr follow-up Significantly fewer falls in the intervention group (152 vs. 88). Intervention group had significantly reduced relative hazard for falls and fall with injury and also had improved balance scores.	Campbell NZ	<i>BMJ</i>	1997
<sup>2</sup> RCT of consultation service to reduce falls in nursing homes N=482	NH	See Table 3	See Table 3	Ray USA	<i>JAMA</i>	1997
<sup>2</sup> RCT; 2*2 Factorial design to assess effectiveness of psychotropic withdrawal and exercise	C	See Table 3	See Table 3	Campbell NZ	<i>JAGS</i>	1999

<sup>1</sup>Settings; C: Community, NH: Nursing Home, RH: Residential Home, H: Hospital.

<sup>2</sup>Included in Tables 3 and/or 5 as appropriate.

**Table 5.** Intervention strategies incorporating home/environmental modifications.

Study	Setting <sup>1</sup>	Interventions	Assessor	Outcome	Author	Journal	Year
<sup>2</sup> RCT To assess benefit of regular surveillance of older people at home	C	See Table 3		See Table 3	Carpenter UK	<i>BMJ</i>	1990
<sup>2</sup> RCT Post-fall assessment N=160 ambulatory residents	RH	See Table 3		See Table 3	Rubenstein USA	<i>Ann. Int. Med.</i>	1990
RCT To evaluate effect of falls intervention programme of home safety and exercise Age: 65+	C	I: Remove/repair safety hazards. Falls information groups including group exercise C: No repair advice or group	Physical therapist and health behaviourist	Fewer falls in the intervention group (p<0.05) but no statistically significant effect on number of medical care falls.	Hornbrook USA	<i>Gerontologist</i>	1994
Prospective intervention study in 2 Norwegian municipalities N=181881 person yrs	All	Removal of environmental hazards and promotion of use of safe footwear outdoors in winter		Risk of fracture in community dwellers fell by 26.3% in intervention group. No change in fracture rates in institutional care	Ytterstad Norway	<i>J. Epi. Comm. Hlth.</i>	1996
Pre-test post-test design Community-based injury reduction programme	C	Provided minor home safety modifications – 10 hrs unskilled labour/person	Unskilled person	60% reduction in reported falls after the intervention from 0.81 to 0.33 falls/person/yr.	Plautz USA	<i>Am. J. Prev. Med.</i>	1996
<sup>2</sup> RCT of consultation service to reduce falls in nursing homes	NH	See Table 3		See Table 3	Ray USA	<i>JAMA</i>	1997
<sup>2</sup> RCT Structured interdisciplinary assessment of fallers Presenting to A&E	C	See Table 3		See Table 3	Close UK	<i>Lancet</i>	1999

<sup>1</sup>Settings; C: Community, NH: Nursing Home, RH: Residential Home, H: Hospital.

<sup>2</sup>Included in Tables 3 and/or 4 as appropriate.

**Table 5.** *Continued.*

Study	Setting <sup>1</sup>	Interventions	Assessor	Outcome	Author	Journal	Year
RCT OT Home assessment targeted on environmental modifications in older people discharged from hospital Age 65+, N=530	C	I; Home visit by OT with advice and help with modifications C; Usual care	OT	1 yr follow up period Reduction in number of falls in intervention group as compared to control (p=0.05) Intervention only effective in those with history of falls	Cumming Aus	JAGS	1999

<sup>1</sup>Settings; C: Community, NH: Nursing Home, RH: Residential Home, H: Hospital.

<sup>2</sup>Included in Table 3 and/or 4 as appropriate.

and those responsible for their care. Such fatalistic attitudes need to be countered.

We know that it is possible to reduce an individual's risk of falls and that multidisciplinary and interagency working is likely to bear most fruit. For any prevention/intervention strategy to be effective and relevant, it must alter outcomes of falls and fall-related injury, be easily applicable to everyday practice, acceptable to the relevant population and cost-effective.

Geriatricians should take the lead. Most GPs have no formal training in geriatric medicine, whilst most physicians in other medical sub-specialities have no interest in the topic. There is no substitute for time spent obtaining a full history and doing a complete clinical examination. Investigations must be tailored to the need of the individual and interventions should include access to appropriate specialties and services.

Only through effective interdisciplinary working are we likely to make an impact on the problem of falls in the older population.

## RECOMMENDED READING

### Books

Kenny, R.A. (ed.) (1997) *Syncope in the Older Patient; Causes, investigations and consequences of syncope and falls*. Chapman and Hall, Edinburgh.

### Reports

Feder *et al.* (1998) *Guidelines for the prevention of falls in older people*. Department of General Practice and Primary Care, St Bartholomew's & the Royal London School of Medicine & Dentistry. ISBN 1-898661-36-7.

### Papers

Refer to Tables 3, 4 and 5.

Lauritzen, J.B., Petersen, M.M. and Lund, B. (1993) Effect of external hip protectors on hip fractures. *Lancet*, **314**: 341–11–13.

Oliver, D., Britton, M., Seed, P., Martin, F.C. and Hopper, A.H. (1997) Development and evaluation of evidence based risk assessment tool (STRATIFY) to predict which elderly inpatients will fall: case-control and cohort studies. *BMJ*, **315**: 1049–1053.

## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. With respect to falls in the older population
  - a) Polypharmacy protects against falls
  - b) Most falls are caused by problems intrinsic to the individual
  - c) Benzodiazepines are associated with an increased risk of falls
  - d) Most older people have amnesia for the fall
  
2. The Carotid Sinus Syndrome
  - a) Is the most common cause of recurrent falls in older people
  - b) Should be considered in individuals with unexplained falls
  - c) The vasodepressor form is easily diagnosed on a general medical ward
  - d) The pathophysiology is well described and understood

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# 9. Orthogeriatric care

Colin Currie

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## INTRODUCTION

Fractures are common in the elderly, and commoner in the frailer, older elderly, because such patients combine the key risk factors, namely osteoporosis and a tendency to fall. In a typical trauma orthopaedic unit, older patients might account for around one-third of admissions and—because of their greater length of stay—a much higher proportion of the unit's bed-days and daily patient census.

Hip fracture is the dominant diagnosis, since it is both the commonest serious and the most serious common injury, comprising perhaps half of elderly trauma admissions. A wide range of generally lesser injuries accounts for the rest.

A high proportion of elderly trauma patients are frail. Many have pre-existing medical problems and some will have fallen and sustained a fracture as a result of acute illness. Inter-current medical problems may complicate the pre- and post-operative management of elderly trauma cases.

Most elderly fracture patients admitted to an orthopaedic unit will undergo surgery. Modern surgery for trauma in the elderly focuses on techniques which allow the patient to use the affected limb as soon as possible, thus minimising the loss of function associated with prolonged disuse and allowing as early as possible a start on the serious business of rehabilitation. Such rehabilitation presents complex challenges to many agencies and clinical disciplines.

Collaboration between orthopaedic surgeons and geriatricians has become increasingly common in the UK over the past 30 years. Patterns of collaboration between care of the elderly and orthopaedic services not only vary greatly but also continue to evolve.

The purpose of this chapter is to cover briefly the key areas of relevant epidemiology, medical and

rehabilitation management, and service organisation.

## Some surgical thoughts on elderly trauma patients

Professor Michael Devas FRCSE, a pioneer of orthogeriatric care in Hastings in the 1960s and 1970s, was a clear thinker and a great phrase-maker. Some of his aphorisms should be very widely known.

- On the fracture: 'Fix it and forget it'
- On surgery: 'Surgery is only an incident in the rehabilitation of the elderly fracture patient'
- On bed rest: 'Bed rest is rehabilitation for the coffin'

## FRACTURES IN THE ELDERLY

A woman aged 50 faces lifetime risks of 30% for a vertebral fracture, 16% for a hip fracture and 15% for a Colles fracture. At a population level, the mass survival for the frail, osteoporotic elderly has resulted in a sustained increase in the incidence of fractures, most notably hip fracture. (See chapter on the management of osteoporosis by Francis.)

Age-specific incidence of hip fracture has risen markedly but in a number of populations it has now ceased to rise. This is perhaps a reflection of a one-off loss of the protective effect of exercise on bone mass for women, the decline in physical exercise in women being in turn related to the effects of urbanisation and industrialisation.

With hip fracture numbers having approximately doubled over the 30 years in many areas, and with case mix tending towards the older and frailer, various alarming projections about bed use have



been published. However, over the same period, improvements in surgery have facilitated earlier mobilisation, and improvements in rehabilitation and service organisation have substantially reduced length of stay. Such efficiency gains are welcome, but have only partially offset the rising numbers. Resources required for hip fracture care will continue to rise for the foreseeable future.

The seriousness of hip fracture as an injury can be documented in several ways. Around one-third of patients are dead at one year, with excess mortality being concentrated on the previously frail and institutionalised and in the early post-fracture months. Around 40% of survivors lose independent mobility, and 10–20% of those admitted from home subsequently enter institutional care. Costs also are significant, estimated at around £5,000 per case within the NHS, with similar downstream costs for community services and institutional care.

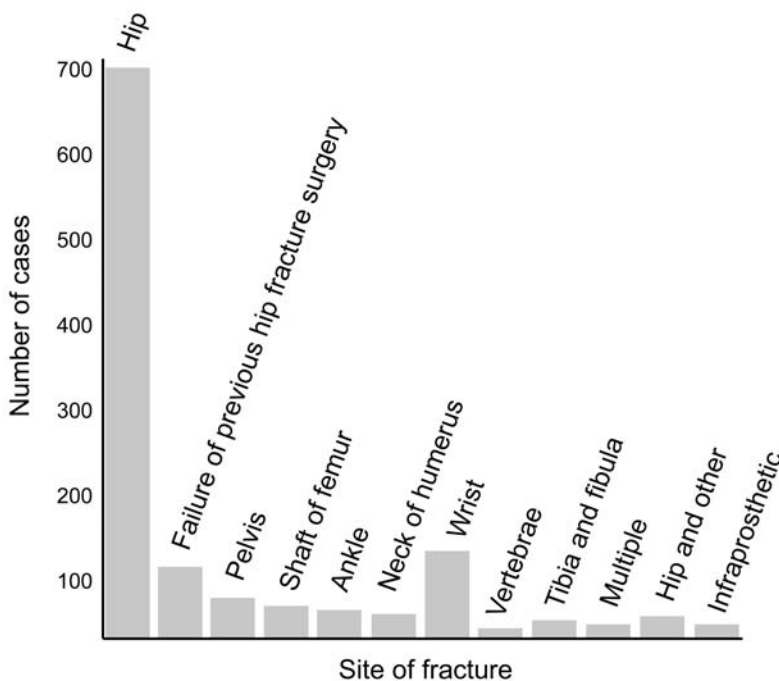
The great majority (around 80%) of hip fracture patients are female. Hip fracture is much less common among men, and male hip fracture patients frequently have poorer general health, more medical problems and are more likely to have abused alcohol.

As a common, well-defined and serious injury, hip fracture may be regarded as a ‘tracer condition’ that tests all services relevant to osteoporotic fractures in the elderly, including accident and emergency, surgery, care of the elderly, rehabilitation, and the various community services, institutional and otherwise, required to cope with residual disability.

Other fractures in the elderly are generally less serious, many not requiring hospital admission. The commonest is wrist fracture, which peaks in incidence at around 70 years (10 years before hip fracture). Fracture of the neck of humerus is another fairly common lesser fracture, also commonly managed non-surgically, as are minor ankle injuries.

Crush vertebral osteoporotic fractures are a common cause of pain and disability but only a minority are admitted to orthopaedic care. Pelvic fracture resulting from a fall is normally associated with little displacement and usually managed conservatively.

In the lower limb, fracture of shaft of femur—now more commonly infra-prosthetic as survivors



**Figure 1.** Types of fractures in patients aged over 70 years admitted to the acute orthopaedic wards at the Royal Infirmary of Edinburgh, 1995. *Source:* MacLennan, W.J. and Currie, C.T. (1997) Rehabilitation after minor fractures in elderly patients. *Reviews in Clinical Gerontology*, 7, 55–62, Cambridge University Press.

of elective and trauma surgery at the hip increase in numbers—is a serious injury often requiring internal fixation. Displaced tibial fractures, commonly resulting from “bumper injuries”, pose considerable surgical problems, as do more complex ankle injuries.

Many minor fractures in the elderly may be managed satisfactorily in the Accident and Emergency Department. In the previously fit elderly, discharge home may pose no particular problems. However, in the frail elderly, good Accident and Emergency care also involves evaluation of function and support, the organisation of appropriate community services, good communication with primary care and, ideally, some form of follow-up.

The remainder of this chapter will concentrate on matters relating to elderly trauma patients who require to be admitted to orthopaedic care.

## THE ROLE OF GERIATRIC MEDICINE

Medical and rehabilitation skills in geriatric medicine have the potential greatly to improve both the quality and the efficiency of care for elderly trauma patients. Contributions made by geriatricians vary considerably, according to local factors such as resource availability, inter-specialty relations and the scale of the challenge. Arrangements in regional trauma unit will differ greatly from those in a DGH orthopaedic unit.

### Possible contributions from geriatric medicine

- Pre-operative rehabilitation assessment
- Pre-operative diagnosis and management of medical problems
- Care of inter-current medical problems during acute stay
- Early rehabilitation and discharge management for previously fitter cases
- Sustained rehabilitation of patients unfit for early discharge
- Placement and terminal care where appropriate

As in many other areas of care of the elderly, good care depends upon the existence of a broadly based and well-functioning multi-disciplinary team. In addition to surgeons and geriatricians,

nurses, physiotherapists, occupational therapists and social workers should be available. Integration of their work to achieve the best possible results for the individual patient is vital. For rehabilitation purposes this is commonly achieved (as elsewhere) by means of regular multi-disciplinary case conferences of relevant staff. However, the pace of events in trauma care may be considerable, and resource pressures, particularly those relating to the availability of beds, can result in considerable strain. To survive and prosper as a trainee geriatrician in such circumstances requires considerable reserves of both tact and leadership.

## THE SURGEON AND THE GERIATRICIAN

Many attempts to establish geriatric-orthopaedic collaboration have floundered, and poor relationships between geriatricians and orthopaedic surgeons are a common theme in such failures. Surgeons work under considerable pressure, responding to urgent events and, in the case of elderly trauma patients, having to carry out difficult procedures in frail, ill and highly vulnerable patients whose bone quality is often poor. The surgeon's core skill is obviously operative surgery, but individuals will vary greatly in their aptitude for and involvement in the medical care and rehabilitation of their elderly patients.

Similarly, their expectations of collaboration with geriatricians will vary. Some will encourage or permit close involvement by geriatricians in all but the most strictly surgical aspects of care. A few will simply demand the removal of “bed blockers”, and despair when this expectation is not or cannot be delivered. Successful collaboration depends upon surgeons and geriatricians respecting each other's skills and contributions, and facing resource issues constructively rather than adversarially.

## PRE-OPERATIVE REHABILITATION ASSESSMENT

Though for practical reasons this is not always possible, there is much to be said for pre-operative rehabilitation assessment. Such an assessment signifies the importance of the rehabilitation process and for many patients it will provide, even before surgery has been undertaken, a reassuring view of

the way ahead, up to and beyond discharge home.

Pre-operative rehabilitation assessment should include the following:

- Nature of injury and likely surgery?
- Previous general fitness (e.g. goes out alone; does shopping)?
- Home circumstances (Living alone? Suitability of housing? Internal or external stairs?)
- Cognitive state (Abbreviated Mental Test?)
- Personal and domestic activities of daily living prior to injury?
- Community services (Home help? District nurse? Lunch club? Day hospital?)
- Previous medical history?
- Active medical problems?
- Current medication?
- Dependent relatives?

Such an assessment can conveniently and reliably be based on a pro-forma and, in the hands of an experienced multidisciplinary team, can be used to generate an early but useful impression of the likely rehabilitation needs and potential of the individual patient. In general terms, a favourable rehabilitation prognosis is associated with previous mental clarity, good previous mobility and functional independence, and favourable—or at least not adverse—home circumstances.

For example, a previously independent 75-year-old widow living alone, managing without any community services input and taking regular exercise, is likely to make rapid progress following surgery for hip fracture and will be glad to be told so. A 92-year-old with the same injury, previously house-bound, managing personal ADLs but dependent on domestic support from community services, is likely to require a longer period of rehabilitation but may still get home again with increased support.

A demented patient admitted from a nursing home with hip fracture will require surgery followed by a fairly brief period of post-operative care before being returned to her familiar circumstances, provided her dependency can be managed appropriately and some physiotherapy input—mainly advice to staff—can be made available. The rehabilitation needs and potential of such patients are modest. Their mortality is high.

As well as allowing early planning of future care, such pre-operative assessment will, for fitter

patients, allow goal-setting and serve to foster where appropriate a spirit of optimism. Carers and other relatives should be seen both as potential contributors to the rehabilitation assessment and allies in the effort to return patients home as soon as it is comfortable and safe to do so.

## PRE-OPERATIVE MEDICAL ASSESSMENT AND CARE

To the experienced trainee in geriatric medicine, some aspects of life in the orthopaedic ward will be quite familiar. In many units the majority of patients will be old, and such patients will be in many respects similar to those seen already in the course of training as admissions to more orthodox care of the elderly settings.\* The main difference is that these broadly familiar patients have, in addition, suffered unfamiliar fractures.

Many common chronic medical problems are associated with falls and fractures in the elderly. These include dementia, Parkinson's disease, previous stroke, visual impairment, muscle weakness, osteoarthritis, severe anaemia, congestive cardiac failure and NIDDM.

In addition, a minority of patients may present with a fracture following a fall attributable to an acute episode such as viral or bacterial infection, transient cerebral ischaemia, unstable angina or MI, or cardiac arrhythmia. In these circumstances the fracture, particularly if it is a hip fracture, dominates the clinical picture. It is important not to lose sight of a perhaps clinically important precursor event.

Sadly, for a small but important proportion of patients, the fracture is a significant and painful incident in the course of a final illness. The last stages of a dementing process or a complex medical illness may be further complicated by, e.g., a hip fracture. In fact around 10% of hip fracture patients have concomitant malignancy, although in only a small proportion of such cases is the fracture pathological.

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\*A medical student who assisted me on a study of dependency and sensory impairment in elderly trauma patients remarked, after about the 200th patient, "This is not so much an orthopaedic unit as a geriatric unit that does operations". He later went on to become an obstetrician.

In these circumstances, surgical and rehabilitation management must be tailored to the overall context. Since surgery is the most effective form of pain relief for hip fracture, it is justified in all patients likely to survive more than a few days. Surgery, along with generous analgesia, should simply take its part in an overall strategy of good terminal care.

In a minority of elderly trauma patients active medical problems will require vigorous pre-operative management in order to render the patient fit for anaesthesia. Common examples of such problems include new or under-treated cardiac failure, diabetes in need of stabilisation, bronchopneumonia, and dehydration. The aim of all such treatment is quickly to optimise fitness for anaesthesia and surgery and thus minimise pre-operative delay.

Sadly, not all pre-operative delay occurs because patients are medically unfit for surgery. Pre-operative delay not attributable to medical problems but due to administrative causes such as lack of theatre time is associated with poorer outcomes. In a few unfortunate instances, repeated fasting and cancellation of surgery leads to further problems (e.g. inter-current infection, electrolyte disturbance) leading in turn to further delay. Uncertainty, discomfort and helplessness can quickly destroy the morale essential for post-operative progress.

## CONFUSION

Acute confusional states are common in elderly trauma patients. Contributory factors include the familiar list relating to any acute episode and hospital admission in the elderly. However, trauma patients are, for a number of reasons, at additional risk.

The distress, anxiety and situational upset of fall, fracture and admission to a busy and perhaps noisy trauma ward commonly causes decompensation in patients previously only precariously oriented. Most are in pain, which causes restlessness and sleep deprivation. Intercurrent infection (particularly UTI and RTI) is common. Alcohol withdrawal should be borne in mind, particularly with male patients. Hypoglycaemia and electrolyte disturbance caused by prolonged pre-operative fasting are also risk factors.

Cerebral hypoxia is the final common path of a number of surgically related precipitants of confusion. Hypotension during surgery correlates strongly with post-operative confusional states, which may be profound and slow to resolve. Post-operative opiate analgesia may depress respiration. In addition, low oxygen saturation may persist for some days after anaesthesia and monitoring for up to 5 days may be necessary.

In the majority of cases confusion is multifactorial but mercifully brief, and many patients who experience even quite serious disruption for one or two days after surgery go on to regain their orientation and hence their rehabilitation impetus.

## FLUID BALANCE

Many elderly trauma patients will have impaired renal function prior to injury, and many will be hypovolemic at the time of admission and after. The proper management of fluid balance through pre-operative, operative and early post-operative stages of care is therefore of great importance.

Fluid management is traditionally a surgical responsibility, and one which has on occasion given rise to concern. The National Confidential Enquiry into Peri-operative Deaths 1999 Report which documents more than one thousand deaths at age 90 or over, 60% of which occurred in orthopaedic care, notes that 'fluid imbalance can contribute to serious postoperative morbidity and mortality', and recommends detailed and active attention to fluid balance issues.

This includes the correction of pre-operative hypovolemia, particular care with spinal anaesthesia (which by causing vasodilatation potentiates the hypotensive effect of hypovolemia), close post-operative monitoring of fluid balance, and daily post-operative checking of serum urea, electrolytes and creatinine.

## NUTRITION

A proportion of patients admitted with hip fracture—perhaps around one-fifth—are severely undernourished. In winter, this proportion rises because of the increased vulnerability of the frailest and least well-nourished to the effects of cold weather. There is some evidence that nutritional

interventions, such as oral supplementation to increase energy and protein intake, are beneficial.

## **PRESSURE DAMAGE**

Pressure damage, often acquired in the few hours following the fracture, may take days to become apparent and then go on to require prolonged care, inhibit rehabilitation and add weeks or even months to overall length of stay. (See chapter on pressure sores by Gonsalkorale.)

Awareness of risk, together with appropriate action, is a high priority in the care of elderly trauma patients, from the time of admission to the Accident and Emergency Department and throughout the period of trauma-associated dependency. Appropriate nursing documentation and equipment are essential, and such interventions have been shown in the course of clinical audit to be beneficial, substantially reducing the incidence of pressure damage.

Prolonged bed rest is now rarely indicated for elderly trauma patients, because surgery is geared to avoid it wherever possible. A few, mainly those with major pelvic or femoral shaft fractures, may require to be immobilised for prolonged periods. Most do not. Early mobilisation and active rehabilitation are the key to minimising post-operative risk to pressure areas.

## **INFECTION**

Inter-current infections, mainly UTI and RTI, are common in elderly trauma patients. While sensitivities may sometimes be important, there are strong arguments for immediate treatment to minimise systemic upset, dependency and delay in rehabilitation. Cultures from material despatched prior to immediate treatment may be of value later, though in most cases appropriate antibiotic therapy prescribed on the basis of clinical judgement will have been effective.

Despite the routine use of pre-operative antibiotic prophylaxis, wound infections, particularly in hip fracture patients, can be problematical. The majority are superficial. The small minority of deep infections greatly increases morbidity and dependency. The sequence of deep infection, removal of implant, open infected wound requiring complex nursing care etc. is a dispiriting

one for patient, surgeons and all others concerned. Morbidity and mortality are high.

The recent rise in MRSA infections is also a matter of great concern, with implications for operating theatre procedures, nursing care and rehabilitation. Precautions are time-consuming and not always effective. Where isolation becomes necessary, frail elderly patients do not thrive. Scope for mobilisation is very limited in a single room. Self-esteem suffers. The impact on rehabilitation progress may be very serious.

## **DEEP VEIN THROMBOSIS: THROMBOPROPHYLAXIS**

Deep vein thrombosis and pulmonary embolus is a much feared complication in elderly trauma patients, particularly in relation to lower limb trauma, surgery and associated bed rest. Thromboprophylaxis by low molecular weight heparin is routine in many units. Where deep vein thrombosis occurs, management is determined by its extent and the overall clinical context.

Minor distal thrombosis may be managed with support stockings and continuing low molecular weight heparin. Major thrombosis other than in the frailest patients merits warfarinisation. However, prolonged warfarinisation—e.g. beyond a few weeks—may be hard to justify, and very hard to deliver reliably and safely, in frail elderly patients proceeding home.

## **MORALE, PAIN CONTROL, DEPRESSION**

The impact of a major fracture on the life of an elderly patient varies greatly with individual circumstances, but may for some be immense. For a sad minority, a hip fracture signifies the end of independent living and the loss of a loved and valued home. Many older patients, with impressions gained from what happened to their own elderly relatives many years ago, believe that hip fracture automatically means a hospital stay of months at least. Active management of the patient's expectations and morale is an important and much under-valued part of the rehabilitation of elderly trauma patients.

Early and positive involvement of the patient in discussions about surgery, post-operative care and rehabilitation is to be encouraged. Since hip

fracture is the major clinical problem, an information sheet or booklet, outlining the main types of fracture and operation and describing the process of rehabilitation, is well worth providing. It will be appreciated by patients and, importantly, by carers and other relatives.

Morale can also be preserved and promoted by minimising pre-operative delay and by ensuring adequate pain control. Pain control protocols, backed up with simple pain scales (e.g. frowning face to smiling face) ensure a minimum standard of analgesia even when wards are busy and staff do not know patients well. The special problems of the confused elderly should be remembered. Confusion does not protect people from pain, and poorly managed pain adds to confusion. Opiates are effective, and should be mandatory for the first few post-operative days in most cases. Good analgesia is also essential for rehabilitation, and 'pre-physio' analgesia greatly assists early mobilisation.

The distress, discomfort and possible indignity of a sudden admission to a trauma ward should not be underestimated. A sensitive approach to the individual patient and her (and it is usually her) anxieties is essential. Explanations of events should be made in terms the patient understands. "You *were* fasting for theatre, but there's been a multiple and now you've been cancelled" makes sense only to those of us who work in trauma wards all the time.

The patient's morale is hard to assess, hard to predict and yet vital to the rehabilitation process. Apparently robust characters may succumb to sudden despair. Aged, frail and previously disabled individuals may sail through an admission. Experienced rehabilitation staff recognise this, and know also that an approach broadly characterised as 'realistic optimism' is usually seen as both supportive and effective.

Early progress improves morale. A few steps today, a few more tomorrow and getting as far as the toilet a few days later may be hard and uncomfortable work, but the prospect of a pre-discharge home visit is a powerful incentive, and awareness of similar patients in the ward who are a bit further along the road that leads homewards will also boost morale and in turn lead to further progress.

In the course of an acute admission for trauma it is often difficult to assess whether or not a patient is depressed. So much is going on that distress and the symptoms of possible depression are

inextricably entangled. Later in the rehabilitation process the distinction will be clearer. A minority of patients, principally those who are disproportionately despairing or mysteriously under-performing in rehabilitation, will turn out to have treatable depression. At this stage a screening questionnaire, e.g. the Geriatric Depression Scale, may be useful. The impact on rehabilitation of successful antidepressant therapy can sometimes be dramatic. (See chapter on old age psychiatry by Banerjee *et al.*)

## REHABILITATION

### Acute Rehabilitation

Trauma-related dependency is intrinsically self-limiting. Patients, although requiring considerable nursing care post-fracture and in the perioperative period, have in the majority of cases the potential to begin rehabilitation early. To cite again the most common significant injury, hip fracture patients in many units will be able to sit or even weight bear on the first post-operative day. The combination of good pain control and enthusiastic physiotherapy will maximise the early potential of the previously fitter patients.

However, many elderly trauma patients, previously frail and with limited powers of concentration, will require a more gentle approach, based on 'little and often' and seeking gradually to extend the range of comfortable mobility with a frame.

Many patients with either upper or lower limb injuries will find it difficult to begin dressing themselves, but early dressing practice under occupational therapy supervision will signify the return to normality.

For patients making satisfactory early progress, an immediate goal is the ability to mobilise to the toilet and manage independently there. This is a useful threshold at which to consider a pre-discharge home visit, usually with an occupational therapy but sometimes involving the physiotherapist.

#### *Rehabilitation arrangements for elderly trauma patients*

- Should address early rehabilitation potential of previously fitter patients

- May include early discharge and outreach monitoring/rehabilitation for such patients
- May provide post-acute inpatient rehabilitation for patients requiring longer stay
- Will vary greatly from place to place

### **“Hospital at Home”, Early Supported Discharge**

Many such schemes have now been developed and reported. The common elements are early multidisciplinary post-operative rehabilitation in the acute unit; discharge planning and the mobilisation of appropriate community or outreach rehabilitation services; and follow-up to monitor progress and ensure patient safety. (See chapter on planning services by MacMahon and Battle.)

Such schemes require to be properly funded, staffed and organised. Systematic evidence of their overall impact is limited by their diversity. Obviously, details of local arrangements are determined by local factors such as resources, funding responsibilities, interdisciplinary and inter-agency relations etc. However, there is now a broad range of evidence that such schemes are effective in reducing length of stay and promoting independence at home. Economic and patient satisfaction evaluations have been encouraging.

### **Post Acute Inpatient Rehabilitation**

For frailer and/or more seriously injured patients, unsuitable for the rapid rehabilitation approach described above, other arrangements have developed. Again, names and details vary from centre to centre but common elements can be identified.

Orthogeriatric units, geriatric orthopaedic rehabilitation units, etc. offer patients with no early prospects of home a sustained period of multidisciplinary rehabilitation, usually under geriatrician leadership, in order to maximise the prospects of eventual discharge home.

Patients proceeding home from orthogeriatric units may be among the frailest to be discharged from hospital. Careful discharge planning, ideally backed up by post-discharge monitoring and some continuing rehabilitation input, will be appreciated, and may serve to minimise the numbers readmitted.

In terms both of the aspirations of the individual patient and the overall cost-effectiveness of care, this ‘last chance for home’ is extremely important. Even fairly prolonged rehabilitation and relatively costly care packages to ensure adequate levels of care and safety at home can be justified. The loss of freedom and the costs associated with permanent institutionalisation are great, and it is to be greatly regretted that, in the wake of a hip fracture, older patients may sometimes be dispatched quickly and ill advisedly in an irreversible long-term placement.

A second major function of post-acute orthogeriatric care is to achieve placement for patients unable to go home. If, after every reasonable effort has been made to maximise the patient’s level of function, institutional placement is inevitable, an orthogeriatric ward provides more appropriate care pending placement than that on offer in an acute orthopaedic unit. In addition, time and expertise are available to ensure a proper process of maximising the patient’s function and thus determining the level of permanent care required: NHS long-term care, nursing home care, or residential care.

A third and very important function of an orthogeriatric unit is to provide terminal care for the frailest of survivors of trauma and trauma surgery. Again, the circumstances of a post-acute ward might be seen as more appropriate. The general principles of terminal care for the elderly apply. (See the chapter on palliative care by Kite and O’Doherty.)

*Goals of post-acute inpatient care for elderly trauma patients (Orthogeriatric Units, Geriatric Orthopaedic Rehabilitation Units etc.)*

- Sustained rehabilitation to provide a “last chance for home” for frailer patients
- A placement service—following rehabilitation/triage—for patients who cannot go home
- Terminal care for a minority of patients

Orthogeriatric units with a non-selective approach to admitting patients from acute care (i.e. those taking all patients who cannot be discharged directly home) might expect that around half their patients will eventually return home, around 40% require placement, and the remaining 10% die.

Orthogeriatric unit admission policies, however, vary considerably. Where the number of rehabilitation beds is very limited, there is an argument for

selective admissions, restricted to those perceived on the acute ward as having 'rehabilitation potential', i.e. the previously fitter and less challenging patients. Problems, of course, result in relation to the continuing stay in acute orthopaedic care of patients with no need of the specialist services in that unit.

Another approach to selection is to take patients seen as facing problems and therefore more in need of prolonged specialist orthogeriatrics rehabilitation. Where resources permit, a non-selective transfer policy is clearly preferable, both in terms of freeing acute beds and maximising the rehabilitation potential of the frailest patients. A further important consideration is that selective policies rely essentially on a predictive exercise carried out on a highly unpredictable population. A non-selective transfer policy, in practice taking all patients who cannot be discharged timeously from the acute ward, has at least the merit of intellectual respectability.

## THE WAY AHEAD?

Growing realisation of the importance of rehabilitation for elderly trauma patients has resulted in many and diverse local initiatives. Given the demographic projections, it is likely that service pressures will continue to grow. Continuing efforts directed at improving rehabilitation will be required. However, considerable difficulties arise in evaluating evidence about effectiveness and in using such evidence to support rehabilitation developments in specific settings.

In this respect, the contrast between surgery and rehabilitation is illuminating. Surgical advances, such as the dynamic hip screw, can be evaluated and adopted for widespread use in the fairly standard conditions of the operating theatre. Advances in rehabilitation—more complex, more multidisciplinary, and much more dependent on local circumstances—are much more difficult to evaluate and replicate.

For sound logistic reasons, randomised controlled trials in trauma rehabilitation in the elderly have been few. Again for logistic reasons, the generalisation of successful approaches in different settings is much more difficult than with technical surgical advances. While ideas and procedures from successful schemes elsewhere can be incorporated into local developments, no universal formula for

successful rehabilitation of elderly trauma patients exists, nor should one be expected.

The development of services depends upon a collaborative, inter-disciplinary approach. Ideally this should be based on local information about existing services; the identification of definable goals for a service initiative; and a commitment both to resource and to monitor the impact of that initiative. General principles and ideas from elsewhere may help, but in the end 'all rehabilitation is local'. Local arrangements must be developed to deliver good care locally, and their effectiveness assessed at a local level.

Recent interest in evidence-based guidelines on hip fracture care should be noted. Such guidelines, specifically for hip fracture care, have been developed and published both in Australia and in Scotland. Based on the 'pathway of care' from the Accident and Emergency Department, through the surgical unit and operating theatre, and on into rehabilitation and eventual discharge, these guidelines are derived from systematic scrutiny of the best available published evidence on pre-operative care, surgery, anaesthesia and rehabilitation. Guidelines, which are designed to support rather than substitute for clinical judgement, appear to generate upward pressures on the quality of care, but require to be translated into protocols for local use.

Major developments in hip fracture audit, by addressing the key 'tracer condition' encountered in orthogeriatric care, offer another and perhaps complementary approach to improving care. An internationally agreed basic data set, resulting from the EU-funded SAHFE programme (Standardisation of Audit of Hip Fracture in Europe), now piloted throughout Europe and in widespread use in Scotland, offers a means of comparing case-mix, process and outcome of hip fracture care both between centres and over time in individual centres. It also provides a method for monitoring case load and case-mix, evaluating service pressures and developments, and, by means of optional additions to the basic data set, an approach to scrutinising specific aspects of care such as anaesthesia, pain control, and pressure area care.

Another interesting possibility for future developments in the care of elderly trauma patients arises in relation to integrated care pathways. Such protocols, documenting the stages of care and recording clinical information and progress in a



systematic and user friendly fashion, can be developed locally and can incorporate the recommendations of the evidence based guidelines. Hip fracture, as a common, serious and economically significant injury, is perhaps an ideal subject for an integrated care pathway in orthogeriatrics.

## SUMMARY AND CONCLUSION

The care of the growing numbers of elderly osteoporotic fracture patients presents a considerable challenge to surgeons, geriatricians and the multi-disciplinary team. Surgery and rehabilitation have both evolved substantially over recent decades.

Collaboration in the care of elderly trauma patients has taken many forms. Schemes designed to promote early rehabilitation are being more widely adopted, and established post-acute rehabilitation units continue to offer sustained multi-disciplinary rehabilitation for frailer patients. Evaluation, although problematic, has been broadly encouraging, particularly for the early rehabilitation initiatives.

For the geriatrician in training, orthogeriatrics may be seen as an emerging subspecialty with its own challenges and satisfactions, involving both acute medical care and a particularly rewarding experience of rehabilitation. Given the projections for a continuing rise in osteoporotic fractures, the organisational challenges for the consultants of the future are likely to be just as interesting as those met in the course of the first few decades of joint working with orthopaedic services.

## RECOMMENDED READING

- Audit Commission (1995) *United They Stand: Coordinating Care for Elderly Patients with Hip Fracture*. HMSO, London. (ISBN 011 886 434 3)\*\*.
- Cameron, I., Crotty, M., Currie, C. *et al.* (2000) Geriatric rehabilitation following fractures in older people: a systematic review. *Health Technol. Assess.*, **4**(2)\*\*.
- Extremes of Age: the 1999 Report of the National Confidential Enquiry into Perioperative Deaths*. (ISBN 0 9522069 6 X)\*.
- Newman, R.J. (ed.) (1992) *Orthogeriatrics: Comprehensive Orthopaedic Care for the Elderly Patient*. Butterworth Heinemann, Oxford (ISBN 0 7506 1371 8)\*\*\*.
- Scottish Intercollegiate Guidelines Network (1997) *Management of Elderly People with Fractured Hip*. Guideline No. 15. (ISBN 1 899893 70 9)\*\*.

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# 10. Palliative care

Suzanne Kite and Catherine O’Doherty

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## INTRODUCTION

*“Death has dominion because it is not only the start of nothing but the end of everything, and how we think and talk about dying—the emphasis we put on dying with ‘dignity’—shows how important it is that life ends appropriately, that death keeps faith with the way we want to have lived.” (Ronald Dworkin, Life’s Dominion p.199)*

Patient-centred care involving complex problem-solving, multiple interacting pathologies, challenging psycho-social situations and multi-professional teams are the key features shared by specialist palliative care and elderly care medicine. They require a similar approach and similar skills, and the patient groups and areas of expertise overlap.

So what has specialist palliative care to offer to geriatricians?

- **Complex symptom-management**, based on a ‘total symptom’ perspective, applying anatomical, physiological, psychological, spiritual and pharmacological principles, and using multi-professional skills.
- **Experience in the care of dying patients**, including the delicate balancing of benefits and burdens at the end-of-life, symptom management and carer support.
- **Specialist knowledge of supportive networks**, statutory and charitable. Both in and outside hospital.

As the population ages and the incidence of cancer continues to rise, we will share the care of an increasing proportion of cancer patients. Patients over 65 are less likely to receive anti-cancer treatment than younger patients, and when this is

offered, it is less likely to be with curative intent.<sup>1</sup> Patients with non-malignant advanced, progressive diseases, such as the endstage organ failures, have usually been under the care of specialist medical teams for some time. Because effective symptom control usually entails management of the underlying disease process for as long as possible, and because relationships with a multi-professional team are already often in place, the model of shared care for these patients is likely to evolve differently than has been the case for cancer patients.

This chapter is not an encyclopedia of symptom control, psychosocial and spiritual care. Excellent reference texts, handbooks and symptom guides exist.\* Instead, we hope to provide helpful practical tips, to direct you to other comprehensive sources of information, and to clarify how to access and use specialist palliative care services.

## PALLIATIVE CARE SERVICES

### Historical Context

Promoting a good quality of end-of-life and death has been the aim of hospices since Roman times when Fabiola, a disciple of St Jerome, set up refuges for wayfarers and sick and dying pilgrims. This work was continued by monastic orders through the Middle Ages, although the philosophy was gradually subsumed by politics and commercial interests. Several centuries later, different socio-political circumstances, notably the potato famine in Ireland and the Poor Law in Britain, led the Irish Sisters of Charity to establish hospices in Dublin and London (St Joseph’s Hospice, 1900). Inpatient and

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\*Reading an introductory text is strongly recommended, see Recommended Reading at the end of this chapter.

community outreach services catered largely for those dying of tuberculosis.

The modern specialist palliative care approach dates from the establishment of St Christopher's Hospice in Sydenham, Kent by Dame Cicely Saunders in 1967. Dame Cicely, herself a trained social worker, nurse and doctor, recognised that the needs of dying patients were being sidelined by the increasing focus on medical technology with curative intent. At this time, telling patients bad news, particularly if this involved a cancer diagnosis, was considered cruel, and patients were largely excluded from the medical decision-making process. The founding principles of St Christopher's were those of an ecumenical Christian faith and scientific method, with the aim of combining the best multi-professional care for dying patients with teaching and research in medicine, nursing and allied professions.<sup>2</sup>

Over the past three decades there has been a vast expansion in palliative care services. Services mushroomed initially, sometimes in a fairly haphazard way, and are now in the process of being streamlined into a coherent framework. What was once a radical, fringe activity has become absorbed into the mainstream. There has been an increasingly secular focus, and services have extended from specialist palliative care inpatient units and community teams to include day care units and multidisciplinary hospital support teams.

### Definitions

Palliative care is delivered by a multi-professional team and:

- Affirms life and regards death as a normal process
- Neither hastens nor postpones death
- Provides relief from pain and other distressing symptoms
- Integrates the psychological and spiritual aspects of care
- Offers a support system to help patients live as actively as possible until death
- Offers a support system to help patients' families cope during the patient's illness and in their own bereavement.<sup>3</sup>

Palliative medicine was recognised as a medical specialty in Britain in 1987 and is defined as “the

study and management of patients with active, progressive, far-advanced disease for whom the prognosis is limited and the focus of care is the quality of life”.

Palliative care can be either specialist or generic. Generic palliative care, or the palliative care approach, should be applied by every health professional caring for a patient nearing the end of a chronic illness, and it is an integral part of all clinical practice. Specialist palliative care is that provided in units and services with palliative care as their core specialty and where all senior members of professional staff are accredited specialists. Palliative procedures and interventions aim to improve symptom control and quality of life, e.g. radiotherapy, chemotherapy, surgery, and anaesthetic techniques. They are mostly done by specialists in disciplines other than palliative medicine.<sup>4</sup>

### Frequently Asked Questions

*Who provides palliative care?*

We all do. A whole-person perspective, good communication skills, basic symptom control, and multi-professional working are now expected rather than desirable. In hospitals palliative care is provided by the team primarily responsible for the patient, and at home by the GP, district nurse (DN) and other community professionals, with the support of specialist palliative care services as necessary.

*When do I refer to specialist palliative care?*

When the patient has active, progressive and advanced disease, *and* an extra-ordinary level of need that cannot be met by the referring team. ‘Extra-ordinary’ need is hard to quantify and will vary amongst patients and with the skills, experience and resources of their carers. However, this need is likely to reflect an intensity or complexity of problems across the physical, psychological, social or spiritual domains.<sup>5</sup> A patient with cancer may not need to be referred, whereas someone with a complex symptom problem from progressive, benign disease may benefit from such a referral. The input provided by the palliative care team will vary from a one-off

assessment, to short and longer-term interventions, depending on need.

#### *Who are the specialist palliative care team?*

The team usually includes one or more specialist nurses, with medical support from a palliative medicine doctor. If the nurse is, or has been, funded by Macmillan Cancer Relief then she will be called a 'Macmillan nurse' (and likewise with other charities, e.g. Ian Rennie nurses). However, 'Macmillan nurse' is widely applied by the general public to any specialist palliative care nurse. Other team members may include: a social worker; counsellor; pharmacist; physiotherapist; occupational therapist; dietician; spiritual advisors; complementary therapists, volunteers and others. All can provide general palliative care skills as well as their specific professional expertise. PAMs (professions allied to medicine) have an important role in symptom control, as well as in promoting patient independence, coping skills, control and hope.

#### *How do palliative care teams operate?*

Teams evolve in response to local needs and resources, with an emphasis on educating and empowering. Therefore there can be differences between teams, even those on adjacent patches. The best thing is to become familiar, and proficient, with using the palliative care services in your own area.

The ideal of specialist palliative care is to provide a smooth service between home, local and specialist hospital, and hospice, working alongside statutory services and other specialist services, for example, oncology. One team may extend into all these settings, or a number of different teams may be in operation. In the latter situation, liaison between these teams is the responsibility of both the referring team and the palliative care services, depending on local practice and the specific situation.

- **Hospital Support Teams** act in an advisory role for particular patients, and promote the palliative care approach through teaching and example. The focus is on collaborative working and shared care with referring multi-professional teams, rather than on duplicating the role of the

professionals involved. Referral to the hospital team often forms the first contact with specialist palliative care services, but, in many areas, referral to community services can be made directly by the referrers. Fifty-five per cent of all deaths now occur in hospital.

- **Inpatient Hospices** are specialist palliative care units. They are neither nursing homes nor hospitals. Patients are admitted for assessment, symptom control, continuing care in the event of extra-ordinary need, respite and rehabilitation. The average length of stay varies between units, but is roughly two weeks, and discharge rates are often in the range of 30–50%. Only 5% of all deaths occur in hospices. Most hospices now have the facilities for blood transfusions, intravenous bisphosphonates and paracentesis. Generally, they do not have radiological services on-site, nor offer cardiopulmonary resuscitation (where relevant, this should be discussed with patients and families prior to transfer). Daycare may also be available.
- **Community Palliative Care** is primarily the responsibility of the General Practitioner and District Nurse, and referrals for 'a Macmillan nurse' should be discussed with them first. It is very important that the GP and DN are informed of the patient's discharge in advance, and that they are provided with enough information to manage the patient from the moment that they get home. If patients require unusual medication (either a different route, or new indication) then check that the hospital pharmacist has liaised with their counterpart in the community. Most 'Macmillan' nurses have a waiting list for their first assessments and do not make contact immediately unless there is a specific and urgent reason for doing so—and this urgent need must be communicated effectively for it to happen! In practice, it is very rare for patients discharged carefully from hospital to require an urgent contact. The different nursing care provided for palliative care patients at home can be a source of confusion (see Box 1). Less than 30% of people now die in their own homes.

#### *Why don't specialist palliative care teams take over the care of all terminally ill patients?*

First, because there is no evidence that they need to. Secondly, this would deskil other professionals in

a key area, and thirdly, it would increase the stigmatisation to which palliative care services are already subject as a result of their proximity to death, ‘the last taboo’. This stigma might prevent patients from accessing services.

*What evidence is there that specialist palliative care services are effective?*

The evidence is scanty and the methodological challenges inherent in the assessment of palliative care services are huge and well-documented.<sup>6</sup> Some of these are discussed in the research section. Good palliative care is collaborative, and includes educating and empowering others. Therefore, one would expect the effects of good specialist palliative care to spill over into adjacent statutory services, thus reducing the apparent impact of the specialist service in a direct comparison with the standard control. There is also the question of whether one can ethically randomise subjects to *not* receive what has become an established intervention.

However, researchers continue to search for appropriate methodologies. Such evidence as there is<sup>7</sup> shows that:

- People are more satisfied with all types of palliative care, whether provided in inpatient units or in the community, than with care in general hospitals.
- Pain control is better in inpatient palliative care units than in hospital or at home, and hospital support teams may facilitate better symptom control than conventional care.
- Many patients’ needs are not met in terms of place of death, with most patients wishing to die at home but less than 30% doing so, largely because of poor symptom control.
- Community palliative care services do not increase the proportion of patients dying at home.
- Where hospice beds are provided, the number of patients dying at home decreases, rather than fewer patients dying in hospital.

### **Box 1: Who’s who in community palliative care nursing.**

**District Nurse** is the primary carer along with the GP. Responsible for: general assessment of nursing needs; general nursing care, including emotional support, health education, and care of

wounds, pressure areas and bowels; accessing and coordinating other services, e.g. physiotherapy; organising equipment, e.g. mattresses, commodes etc., and referring to occupational therapy for other aids and appliances. Liaises closely, and does joint assessments, with social services.

#### **Specialist Palliative Care (Macmillan) Nurse.**

Provides: specialist palliative care assessment, advises on symptom control; gives emotional support; provides patient and professional education, and bereavement support. Liaises closely with DN and GP with advice. Input varies from purely advisory to, very occasionally, hands-on care. Service provision varies widely, with availability ranging from usual working hours (more usually) to 24 hours a day, seven days a week (rarely, and usually for telephone advice). May have access to a sitting service.

**Marie Curie Nurses.** Charitably funded nurses of various grades who provide a nursing service, usually at night. Their role is to enable the patient to remain at home, or to give carers respite. They are a limited resource and are rarely available more than for a few nights a week or for more than a few weeks at a time. Access via DN, and availability varies.

**Other specialist nurses.** Nurses specialising in the management of lymphoedema, stoma care, and tissue viability, and site-specific oncology nurses (e.g. breast, lung, urogenital) may be available.

**Home Care Workers.** Provide general everyday care, including help with housework, laundry and shopping, and perform basic caring duties such as washing, toileting, transferring etc. Access via social services.

## **Benefits and Palliative Care Patients Over 65 Years**

### *Attendance allowance*

This is calculated at two rates. Patients with a prognosis of about 6 months or less are automatically eligible for the higher rate under ‘special rules’ (DS1500). In order to qualify, the patient’s doctor needs to complete medical details on the DS1500 form, which is then sent directly to the relevant Disability Benefits Unit of the Department of Social Security, or it may accompany the separate form

completed by the patient, relative or social worker. The advantages to the patient of 'special rules' are:

- Higher rate: £52.95 per week rather than £35.40 (January 2000).
- Speed: benefit usually payable within 3 weeks of application.
- Easier paperwork: exempt from 18 pages of the second part of the form, which includes questions such as, "Do you sometimes need someone to keep an eye on you because you get confused?" If not, the first part of the form will still take at least 30 mins, and help is often appreciated.
- Application not dependent on presence of a carer: single people can apply.
- Once attendance allowance is in place, the patient may be entitled to other benefits, such as an increase in income support and housing benefit. Carers may be eligible for Invalid Care Allowance, if they are not already in receipt of another social security benefit. If the carer is receiving income support, they might be entitled to the carer's premium.

#### *Macmillan cancer relief grants*

- Application forms (form CR1) are considered from doctors, nurses, social workers, but not directly from patients. Must be accompanied by a very brief medical report (CR6).
- Grants considered on basis of income.
- Paid quickly—within days.
- Provided for one-off purposes, e.g. travelling, heating, clothing, furnishings, care, telephones, convalescence and other general expenses.
- Not awarded for items already purchased, or for items that should be supplied by the NHS, e.g. medical equipment and medical appliances.

Macmillan Cancer Relief (England and Wales), Anchor House, 15–19 Britten Street, London SW3 3TZ. Tel: 0207 351 7811. Scotland and Northern Ireland: 9 Castle Terrace, Edinburgh EH1 2DP. Tel: 0131 229 3276.

*With thanks to Roy Nightingale, Community Social Worker, St Joseph's Hospice, Hackney, London.*

## SYMPTOM MANAGEMENT

Retrospective surveys of bereaved carers suggest that most patients with advanced, progressive and

**Table 1.** Symptom prevalence in last year of life.<sup>8,9</sup>

Symptom	% cancer patients with symptoms	% non-cancer patients with symptoms
Pain	84	67
Loss of appetite	71	38
Nausea/vomiting	51	27
Insomnia	51	36
Trouble with breathing	47	49
Constipation	47	32
Depression	38	36
Loss of bladder control	37	33
Mental confusion	33	38
Bed sores	28	14
Loss of bowel control	25	22
Unpleasant smell	19	13

life-limiting disease have symptoms which influence quality of life enough to require treatment (see Table 1).

### General Principles of Symptom Management

These are the same as those underlying any medical problem, i.e.:

- Assessment: history, examination, appropriate investigations.
- Considering underlying pathology and physiology: where is the problem? what are the possible physiological mechanisms?
- Diagnosing the most likely causes.
- Considering the wider picture: the interplay of psychosocial and spiritual factors and the expression of symptoms.
- Implementing a management plan with the patient.
- Reviewing, revising.
- Reviewing again, revising again...

The keys to success in palliative care:

**1. Thorough assessment.** You need to build up a 'four-dimensional' model of the problem, using whatever information is available. The different perspectives of patient, carers, nurses, GP etc. can be useful here. Old notes, operation details and radiological investigations are invaluable in building up a three-dimensional anatomical/physiological image. The fourth dimension is the

psychosocial and spiritual domain. In particular, establish the *significance* of the symptom to the patient—this will help to bring fears into the open, and, on occasion, may give you the diagnosis.

You will also need to unpick the underlying and overlapping pathologies, and your own assumptions. Is the symptom problem:

- Related to the cancer or progressive non-malignant disease?
- Related to the treatment of the disease?
- A coincidental problem? (e.g. gallstones, diverticular disease, scabies...)
- All of the above? Expect to find multiple causes.

## 2. Establish a realistic management plan with the patient and team at the outset—and revise as necessary.

Is the underlying cause treatable, e.g. with anti-cancer treatment, surgery, antibiotics, or other disease-modifying drugs? If so, what is the likelihood of success? Would the treatment be appropriate on the basis of the balance of risks/benefits for this particular patient? What are you going to do in the meantime?

Where treatment of the underlying cause is inappropriate or impossible, palliation should be directed at the underlying pathological mechanism/s.

If a firm diagnosis cannot be made, treatment should be instituted on a probability basis for the most likely cause. Assessing response to this initial treatment and a further period of observation may clarify the situation. Consider prescribing as required drugs with a different mechanism of action to those on the regular prescription.

The patient should be actively involved in symptom management, whenever possible. The patient needs to know the likely timescale in which improvement will take place, and the degree of improvement that can be expected. They also need the reassurance that if initial treatment fails, other options will be available. For example, about 20% of cancer pains will be ‘difficult’ to control, particularly if there is a neuropathic or mechanical component, and much needed hope should be provided in the context of realistic goals, e.g. for pain to be controlled at night, then at rest in the day, and then on mobilisation.

Since most treatments will have some associated burdens, it is necessary to explore what is acceptable to individual patients in view of their personal goals and quality of life.

**3. Routes of administration.** The oral route is usually the one of choice as it is simple, many drugs are available and it is minimally invasive. Swallowing a large number of drugs, however, can be a burden, and every opportunity should be taken to rationalise drugs. Ask patients whether they prefer tablets, capsules or suspensions, where this choice is available. If a patient cannot swallow or absorb drugs taken by mouth then alternative routes will need to be considered:

- **Rectal route** is limited by the unavailability of rectal preparations of many drugs, and the unacceptability of this method of administration to some patients. However, absorption is high, and suppositories of paracetamol, diclofenac and domperidone are available.
- **Transdermal route** is even more limited in terms of the number of drugs available. However, patches of fentanyl and hyoscine hydrobromide are useful for medium to long-term control of stable symptoms. Because of the prolonged time to reach steady state blood levels, they are not appropriate for acute symptom control, or in rapidly changing situations.
- **Transmucosal** forms of lorazepam, prochlorperazine, phenazocine etc. may be useful.
- **Subcutaneous route** is used widely. Many injectable drugs can be given this way, either as single doses of injectable drugs or as continuous infusions delivered by a syringe driver (although some drugs used in practice are not actually licensed for this route, e.g. metoclopramide). This permits parenteral drug administration with minimal patient burden (a 22G butterfly needle inserted subcutaneously and usually changed every few days) and has the theoretical advantage of steady plasma levels of a wide choice of drugs effective for symptom control. There are several different syringe drivers (e.g. green and blue Grasebys), with different rate settings — discuss the prescription with a senior nurse and seek advice if you are unsure. For problems encountered with syringe drivers, see the *BNF* section on ‘Prescribing in palliative care’.

**Syringe drivers are not just for use in the terminal phase. There is nothing magical or sinister about them. They are just a useful tool in any situation where oral absorption of a drug is unreliable for whatever reason. Once up, a**

**driver can come down again. However, the need for them is greatest when a patient is dying, and the public may associate them with imminent or accelerated death. Patients and relatives may need to be reassured that there is not necessarily a causal relationship between the two.**

**4. Regular reassessment,** with a time interval determinant on the severity of the symptom. If the treatment is not working, reconsider your (four-dimensional) diagnosis, including the route of administration. A common error with antiemetics is to prescribe these orally for established vomiting, when absorption will be poor or nonexistent and a parenteral route, e.g. subcutaneously, for 24 hours could break this established pattern. Also remember:

- Multiple causes for the same symptom may be present *sequentially*, as well as concurrently. For example, constipation that was due to hypercalcaemia may now be due to the opiates prescribed for bone pain, and to immobility.
- Treatment of one symptom may unmask another. This is very common, particularly when patients present initially with an overwhelming symptom, e.g. the lifting of a severe pain may reveal other aches and pains, and a confused patient may not be able to tell you about their nausea.
- The nature of the underlying disease is that it is progressive—new and evolving symptoms are to be expected.
- Polypharmacy is the scourge of palliative care. If a drug doesn't work, or is no longer needed, stop it.

**5. Anticipate problems.** Much of effective symptom control is pattern recognition, and some future problems can be anticipated with scope for pre-emptive management. For example, an inoperable annular carcinoma of the rectum will cause progressive constipation, and may lead to complete obstruction, so the appropriateness of a palliative colostomy should be considered.

**6. Mechanical problems need mechanical solutions.** The pain of fractured bones responds poorly to analgesic drugs unless the bone is fixed or immobilised. Vomiting due to stenosis of the pylorus responds poorly to antiemetics, and

constipation due to occlusive rectal tumours will persist in spite of laxatives. There are limits to what you can achieve with medicines, so if a symptom has a mechanical cause, then consider a mechanical solution.

### **Emergencies in Palliative Care**

Fortunately these are rare, but when they do occur they can be devastating for everybody. Often such emergencies may be foreseen, and pre-empted, or managed more effectively with the benefit of preparation. Distress levels may have been very high even *before* the emergency. Maintaining a calm demeanour is therapeutic to all concerned.

- **Overwhelming pain.** Immediate management is directed at achieving sufficient comfort to permit better assessment. Find the most comfortable position for the patient and administer a strong opioid (this is likely to have some effect on most pains), e.g. diamorphine, remembering to use the equivalent of the 4-hourly dose if the patient is already on regular strong opioids. For bowel colic, consider hyoscine butylbromide, and for biliary colic, ureteric colic, bone pain and liver capsule pain consider a NSAID, e.g. diclofenac. Repeat as necessary until the pain is relieved, and continue to assess and treat the whole situation as appropriate. Ask for expert help early if initial measures are proving ineffective.
- **Severe agitation.** Assess for reversible causes such as pain, urinary retention, loaded rectum, drugs (e.g. opioids, corticosteroids) or withdrawal of drugs (e.g. opioids, alcohol, nicotine) and biochemical disturbance (e.g. hypercalcaemia), and treat as appropriate. Carers and nurses may be aware of the presence of spiritual distress, heightened as death approaches (terminal agitation). Interim management with anxiolytics or neuroleptics may be needed while the treatment of the underlying cause takes effect. In terminal agitation, it may be appropriate to sedate the patient, but this is ideally a multi-professional team decision. It should be discussed with the relatives and the patient, if possible.
- **Hypercalcaemia.** This can occur with almost any cancer, but is particularly common with squamous cell carcinomas, myeloma, bronchial carcinoma and breast cancer. Symptoms include



nausea and vomiting, drowsiness, confusion, constipation, thirst and polyuria. Treat with intravenous rehydration, followed by intravenous bisphosphonates, and further hydration as necessary. Consider longer-term management, e.g. anti-tumour therapy.

- **Spinal cord compression.** This occurs in about 3% of patients with advanced cancer and in 20% of cases compression is at more than one level, most being in the thoracic spine. Compression below L2 is of the cauda equina. Back pain occurs in over 90% of cases of cord compression and often predates other symptoms, i.e. sensory disturbance, motor weakness and sphincter dysfunction. Therefore, back pain should arouse suspicion in any cancer patient. Sphincter disturbance is a late feature and a poor prognostic sign for recovery. A sensory level can only be found in around half of patients. A plain X-ray shows vertebral collapse or metastasis in 80% of cases. Diagnosis should ideally be confirmed by MRI scan, but, where this is not possible, CT with myelography is an alternative. Management should be initiated on clinical diagnosis (do not wait for a scan!) with high dose intravenous dexamethasone, followed by maintenance oral dexamethasone (as per local oncology practice). Refer for radiotherapy or surgery as soon as the diagnosis is confirmed (and definitely within 24 hours). The possibility that loss of function may not recover should be discussed early.
- **Superior vena caval obstruction** presents with venous distension, oedema, suffusion of the face, neck and arms, and headache. It is due to blockage of venous return by mediastinal tumour. Immediate treatment is with high dose intravenous dexamethasone, followed by oral maintenance, and oncology referral for consideration of radiotherapy, chemotherapy or a superior vena caval stent.
- **Stridor** is fortunately rare. Reassure the patient, sit them up, and maintain a constant professional presence. Oxygen or heliox (4:1 helium:oxygen mixture) should be used if available, and an anxiolytic given. Further management, e.g. high dose steroids, radiotherapy or stent should be considered.
- **Catastrophic haemorrhage.** This may be a terminal event in a patient close to death, and resus-

citative measures would not then be appropriate. It is a rare, but much feared and frightening event for patients, carers and staff. In reality, most patients will drop blood pressure quickly and lose consciousness. If this is a possibility, preparations should be made. Prescribe an anxiolytic (e.g. midazolam iv/im/sc or diazepam pr/iv/im) and an analgesic (e.g. diamorphine iv/im/sc, 4 hourly equivalent dose). The intravenous or rectal route is preferable in this situation as drug absorption by the other routes is slower and less predictable. Dark blankets should be readily available, carers should be forewarned and reassured and a constant professional presence should be maintained throughout the event (if the patient is in hospital).

- **Aspiration.** This is more common in neurological disease than in cancer, and it is very rarely a terminal event. The distress of previous episodes leads to fear of recurrence, and an important part of management is acknowledging and addressing this fear. Speech therapy and dietic advice should be sought. Anticholinergics (e.g. hyoscine hydrobromide) can be used to dry secretions and antitussives can be helpful. For acute episodes an ‘emergency pack’ of diamorphine, midazolam (or rectal diazepam) and hyoscine hydrobromide should be prescribed.

## Pain

*“Pain is what the patient says hurts”*  
(Twycross, 1997).

Pain is both a physiological and emotional phenomenon and the management of pain needs to reflect this. Pain is moderate or severe in 40–50% of cancer patients, and very severe or excruciating in 25–30%.<sup>10</sup> Pain which goes unrelieved rapidly becomes compounded by insomnia, loss of hope, anxiety, depression and social isolation—all of which exacerbate the pain and propagate a vicious downward spiral. Such chronic pain leads to modulations in the neurotransmitters in the pain pathways, such that pain is intensified. Once established, pain becomes increasingly difficult to assess and control and it may take some days or weeks to reverse the deleterious effects on the whole individual of the initial painful stimulus.

The general principles of symptom control are applicable here. A full assessment is required of *each pain* (two-thirds of patients will have more than one pain<sup>11</sup>), the patient's mental and emotional state, and related symptoms.

Effective management also requires a working knowledge of the underlying pathophysiology of pain. Consolidate your knowledge by reading the relevant chapters in the basic texts. Highly recommended for those with a particular interest is: Twycross, Robert (1994), *Pain relief in advanced cancer*.<sup>12</sup> Although the focus is on the management of cancer pain, the principles and pharmacology are readily transferable to other contexts.

This section is not designed to be a comprehensive guide to the management of pain, rather it serves to highlight some of the key practical aspects of management.

**Analgesics.** Choice of first-line analgesic will depend on the mechanism and severity of the pain, and it should be taken regularly for constant or regularly recurring pain. The patient should also have at their disposal a supply of a fast-acting drug that will relieve acute exacerbations of the pain ('breakthrough analgesia') that occur in spite of the regular, background analgesia.

The World Health Organisation have devised a three-step analgesic ladder to guide drug selection on the basis of pain intensity.<sup>3</sup> Applying these guidelines, 80% of cancer pains can be controlled with regular, oral analgesics:

- *Step one, for mild pain:* A non-opioid analgesic such as paracetamol +/- an adjuvant such as an NSAID or antidepressant, as appropriate.
- *Step two, for moderate pain:* an opioid for mild-moderate pain (a 'weak' opioid) e.g. codeine, dextrapropoxyphene +/- appropriate adjuvants.
- *Step three, for severe pain:* an opioid for moderate to severe pain (a 'strong' opioid), e.g. morphine, fentanyl, hydromorphone etc. +/- appropriate adjuvants.

A patient whose pain is not adequately controlled by a trial of analgesia on one step of the ladder should progress to the next step. A patient can start on any step of the ladder according to clinical judgment.

*Tramadol* sits between steps two and three. It is a synthetic opiate that acts predominantly at mu

receptors with some delta and kappa receptor activity. It also potentiates spinal inhibition of pain by preventing reuptake of noradrenaline and serotonin. It is available in oral, rectal and injectable preparations. It is useful in the management of mild neuropathic pain, and degenerative bone disease. Adverse side effects are less than with codeine or morphine.

**Morphine** is usually the strong opioid of first choice. It has predictable therapeutic and non-therapeutic effects and is widely available in the UK. The immediate release formulation has a half-life of 2–5 hours and is given to patients regularly every 4 hours. It is also available in slow-release preparations to aid convenience, with half-lives of 12 hours (MST SR) and 24 hours (MXL). Morphine is available in tablet, capsule and liquid forms. Diamorphine is used in preference to morphine for parenteral use because of its greater solubility. The conversion rate for sc/iv diamorphine from oral morphine is between 1:2 and 1:3 (see conversion chart in BNF). The dose of morphine and all strong opioids should be titrated to the pain.

#### Starting a patient on morphine:

- Explain to the patient why morphine is necessary, taking the opportunity to explore possible fears and misconceptions. Reassurance may be given to the effect that: addiction is very rarely a problem in the management of cancer pain; the use of morphine does *not* indicate that the patient is imminently terminal, and it will not speed up their death. Outline the common side effects and how these will be managed. A patient-focused information booklet is available.
- A patient who is naive to opioids should be started on a low dose of regular opioid (very frail patients may only require 2.5 mg) with prn doses of breakthrough analgesia that are equivalent to the 4-hourly dose as often as required. If the patient was previously taking a weak opioid, consider starting on 5–10 mg 4-hourly plus prn.
- Review after 24 hours, and assess for pain relief and side effects (particularly drowsiness, confusion and unsteadiness). If the pain is still present but opiate-sensitive, adjust the dose upwards by about 50% (e.g. 5→10 mg, 10→15 mg, 20→30 mg), with a corresponding increase in the breakthrough medication. If several prn doses are re-

quired each day, increase the dose as above. If the pain is poorly relieved and side effects are troublesome, reconsider the appropriateness of morphine for their particular pain (see Box 2).

- Patients often continue to require the paracetamol component of the combination analgesics which they may have been taking prior to morphine.
- Once pain is stable, convert the morphine to a sustained release preparation. Simply calculate the 24-hour morphine requirement and divide by two for the regular 12-hourly preparation, and by six to give the breakthrough dose of immediate release morphine. For example, a patient receiving immediate release morphine 10 mg 4-hourly, receives a total of 60 mg morphine/24 hours, and will need 30 mg bd of MST SR, with 10 mg of immediate release morphine prn.
- All patients on opioids will become constipated and both stimulant and softener laxatives should be prescribed, e.g. Codanthramer, or senna and milpar.
- Opioid-induced nausea is transient and affects 30–50% of patients. Prescribe anti-emetics as required for a few days (e.g. metoclopramide or haloperidol).
- Initial drowsiness is common but should wear off in a few days.
- Dry mouth, like constipation, affects nearly everyone and persists while opiates are being taken. Advice is required on mouthcare, sips of fluid, and measures that increase saliva production, e.g. sugar-free chewing gum. Artificial saliva may be prescribed.
- Other side effects of morphine include vivid dreams, hallucinations, impaired consciousness, myoclonus, gastric stasis, and pruritus secondary to histamine release. Treat by: reducing the dose; treating the side effect if it is mild and the patient is not otherwise opioid-toxic (e.g. haloperidol for vivid dreams, clonazepam for myoclonic jerks), or consider changing to an alternative opioid if symptoms are significant and persistent.
- Respiratory depression is very rare if the WHO three-step ladder approach is followed. The four specific situations in which it may be a problem in palliative care are: patient prescribed morphine on admission to hospital who has not been taking it at home for whatever reason; inadvertent drug overdose (e.g., very rarely, faulty syringe driver); onset of renal failure, and improvement in under-

lying cause of pain e.g. in the weeks following radiotherapy for bone pain.

**Morphine in liver and renal failure.** Morphine is metabolised by the liver to morphine-6-glucuronide (its active metabolite) and morphine-3-glucuronide. These water soluble conjugates are then excreted via the kidney. In patients with renal failure or severe hepatic impairment, morphine and its metabolites can therefore accumulate. In this situation, if the patient continues to require a strong opioid, two approaches may be adopted. First, immediate release morphine can be used as required rather than regularly, as the plasma half-life will be unpredictable. Secondly, a drug that is not renally excreted can be used regularly, e.g. fentanyl.

#### Box 2.

##### **Pains that do not respond well to opioid:**

Tension headache  
Muscle cramps

##### **Pains that only partly respond to opioid:**

Bone pain  
Neuropathic pain  
Raised intracranial pressure

**Alternative strong opioids.** General indications for use are given in Box 3. Differing clinical effects of the strong opioids reflect their differing affinities for the different opioid receptors, and their actions at other receptors:

- Fentanyl. In transdermal patch form it reaches a steady state in 12–24 hours, so alternative analgesia will be required for at least the first 12 hours. Equally there is a slow decline in plasma concentration on patch removal (average 50% decline in 17 hours). No short-acting form is available as yet in the UK: use morphine or phenazocine for breakthrough analgesia. It can be less constipating than morphine. A conversion chart is available from the pharmacy.
- Hydromorphone. Immediate release (4-hourly), sustained release (12-hourly), and injectable forms are available.
- Oxycodone. Suppositories and oral preparations available.
- Methadone, an opioid agonist and an NMDA receptor antagonist. May be effective in neuro-

pathic pain. Difficult to use because of long, variable half-life (13–100 hours, average 24 hours) with clinical need for more frequent dosing (8 to 12 hourly). Therefore, accumulation can be a problem and it is not suitable for prn use. Best used in experienced hands.

- Pethidine. Clinical usefulness limited by very short half-life and the side-effects of its accumulating metabolites (norpethidine causes convulsions). Not recommended for control of cancer pain.

**Neuropathic pain** is usually only partially opioid sensitive and it can be a difficult pain to treat. Monitor response to an opioid but also consider:

- Corticosteroids for nerve compression syndromes
- Adjuvants such as tricyclic antidepressants (e.g. amitriptyline, start at 10–25 mg nocte, and gradually titrate) or anticonvulsants (e.g. sodium valproate and gabapentin): 1 in 3 patients will respond to either therapy.

If these measures are ineffective, referral to specialist palliative care is appropriate. Other therapeutic options include:

- Other adjuvants such as anti-dysrhythmics (e.g. flecainide, mexiletine), ketamine and methadone—expert guidance required
- Referral to a pain anaesthetist for consideration of non-pharmacological techniques such as nerve blocks and spinal analgesia
- Transcutaneous electrical nerve stimulation (TENS) and acupuncture may help.

**Bone pain** usually requires the use of adjuvant analgesics in addition to opioids. Paracetamol and NSAIDs are particularly effective, and the following should also be considered:

- Bisphosphonates: either orally or by intermittent intravenous infusion
- Referral to a clinical oncologist for consideration of external beam radiotherapy to specific sites, or hemibody irradiation or systemic radionuclides for widespread painful bony metastases
- Corticosteroids are sometimes effective.

**Prescription of strong opioids.** Special procedures apply to the prescription of controlled drugs. There are comprehensive guidelines at the front of the *BNF* (Controlled drugs and drug dependence).

### Box 3. When should an alternative strong opioid be used?

1. A different side effect profile is required:
  - e.g. fentanyl—less constipating
  - oxycodone—decreased incidence of vivid dreams and hallucinations
  - hydromorphone—may cause less drowsiness
2. Pain not completely morphine sensitive:
  - e.g. methadone—useful action against neuropathic pain
3. A different route of administration is required:
  - fentanyl—transdermal
  - oxycodone—suppositories
  - buprenorphine, phenazocine—sublingual

## Nausea and Vomiting

The general principles of symptom management in palliative care should be applied. As with the management of pain, an understanding of the underlying pathophysiology is essential, and a brief overview is provided in Table 2. Excellent guidelines have been produced by the European Association for Palliative Care.<sup>13</sup>

When taking a history, remember that retching, nausea and vomiting are all separate, but related, symptoms.

Reaching a diagnosis may be more difficult than with pain and a more empirical approach may need to be adopted:

- Decide on the most likely mechanism of emesis
- Choose a drug that acts at the appropriate site, and prescribe regularly
- Consider the need for parenteral administration (e.g. via syringe driver) for 24 hours or so
- Prescribe a prn antiemetic that is appropriate to the situation, but which works via a different mechanism (see Box 4)
- Review, revise etc.

**For example**, an 80-year-old woman with liver metastases from a colonic primary has just been started on morphine and diclofenac for liver capsule pain. This controls the pain, but she complains of constant nausea, and vomiting after meals. Following full assessment, possible causes for the nausea and vomiting included:

*Highly probable:* the drugs; gastritis; “squashed stomach syndrome”.

*Possible:* anxiety; NSAID-related renal failure.

*Less likely:* hypercalcaemia, constipation, brain metastases, bowel obstruction.

Initial treatment consisted of stopping the NSAID; prescribing metoclopramide 10 mg qds and adding regular paracetamol, with good resolution of symptoms.

#### Box 4. Antiemetics.

Drug	Receptor/action
Cyclizine	H1, ACh:M
Haloperidol	D2
Metoclopramide	D2, prokinetic in upper gut
Domperidone	D2, prokinetic in upper gut
Levomepromazine (nozinan)	5HT <sub>2</sub> , ACh, D <sub>2</sub> , H <sub>1</sub> .
Ondansetron	5HT <sub>3</sub>
Cisapride	5HT <sub>4</sub>
Dexamethasone	steroid
Lorazepam	benzodiazepine

*Key: H1 histamine type 1; ACh:M muscarinic cholinergic; D2 Dopamine type 2; 5HT<sub>2,3,4</sub> Serotonin receptors, types 2,3 and 4.*

### Bowel Obstruction

Bowel obstruction is common in palliative patients, usually has many causes in aetiology, and commonly presents insidiously with progressive constipation, vomiting and abdominal pain. Clinical differentiation from constipation can be difficult, and a plain abdominal film may be required. Few patients benefit from surgery but it should be considered in every case, particularly in fitter patients with discrete rather than multiple sites of obstruction. Most patients can be managed medically with the administration of parenteral medication:

- Diamorphine for abdominal pain
- Hyoscine butylbromide for colic
- Cyclizine or haloperidol for nausea and vomiting

Some patients may also benefit from the corticosteroids, and octetide can reduce the volume of intestinal secretions.

Oral fluids and low-residue diet may be continued and parenteral fluids are often unnecessary.

High intestinal obstruction can cause intractable vomiting, and continuous nasogastric aspiration or gastrostomy drainage may be required.

### Constipation

Full assessment includes a thorough history (including usual pattern, frequency, consistency, presence of strain, time since last bowel action, laxative use, mobility, diet and associated symptoms), physical examination including rectal +/- stomal examination, and, possibly, investigations such as a plain abdominal film.

The commonest causes of constipation are immobility, poor fluid and food intake, and drugs including opioids and amitriptyline. Bowel obstruction and neurological problems also cause constipation.

Management includes attention to diet; exercise; nursing measures such as responding rapidly to requests for help, and positioning of the patient; oral laxatives, and rectal measures.

Laxatives should be chosen with consideration to the cause of the constipation, the nature of the stool, and patient preference. Laxatives may be broadly characterised as:

- Mainly softening (e.g. docusate, lactulose, liquid paraffin, magnesium sulphate)
- Mainly peristalsis stimulating (e.g. senna, danthron, bisacodyl, sodium picosulphate)
- A combination of softener and stimulant (e.g. Codanthramer, Codanthrusate)

Rectal measures are indicated when constipation persists in spite of appropriate oral laxatives, or, more rarely, they may be used electively in people with paraplegia or very frail patients. Choice of rectal measures is clearly guided by rectal examination:

**Table 2.** Pathophysiology of nausea and vomiting.

Examples of pathology	Site in pathway	Receptors
Raised intracranial pressure Hyponatraemia	Cerebral cortex	Benzodiazepine
Movement Drugs Hypercalcaemia Uraemia	Emetic pattern generator (vomiting centre) Area postrema (chemoreceptor trigger zone), with input from vagus and inner ear	ACh:M, H1, 5HT2 D2, 5HT3
Tumour	Oesophagus	5HT4, D2 ACh:M
Upper GI bleed Gastritis Cytotoxic chemotherapy Surgery Radiotherapy Hepatomegaly Ascites Constipation	Stomach  Small bowel  Large bowel	  5HT3, 5HT4, D2 ACh:M

- Rectum full of soft faeces—bisacodyl suppository
- Rectum full of hard stools—glycerine suppositories
- Evidence of constipated stool in lower bowel—high phosphate enema
- Hard impacted stool—arachis oil retention enema.

Remember:

- Associated symptoms include overflow diarrhoea, urinary retention and bowel obstruction.
- Danthron in Codanthramer and Codanthrusate stains urine red—warn patients lest they think that this is blood! Those with faecal or urinary incontinence need to be protected from danthron rash, either by using barrier cream or an alternative laxative.
- Similar management applies to stomas, but remember that stomas don't have sphincters.
- Have you excluded hypercalcaemia, bowel obstruction and spinal cord compression?

### Breathlessness

In the management of breathlessness, treatment of the underlying cause usually offers the best symptom control:

- Treatable underlying causes include anaemia, infections, pleural and pericardial effusions
- Bronchial obstruction may be alleviated by radiotherapy, chemotherapy, laser therapy or stent insertion

Other palliative measures include:

- Opiates and benzodiazepines and nebulised bronchodilators may partially relieve dyspnoea.
- Oxygen may relieve dyspnoea, but in the absence of correctable hypoxia, this is most likely to be due to the flow of cool air across the face. Therefore, also consider the use of fans.
- There is no firm evidence that nebulised opioids are effective, and they can cause bronchospasm.
- Keep airways moist with humidified oxygen (if used) and saline nebulizers to aid expectoration.
- Nursing and physiotherapy manoeuvres may be effective, including breathing exercises and relaxation techniques.<sup>14</sup> Physiotherapy may also help the expectoration of retained secretions.
- A calm and well-ventilated environment is very beneficial. Breathless patients often feel claustrophobic.
- Respiratory panic is common, and responds well to benzodiazepines and the reassuring presence

of a calm person. Once it has subsided, patients often respond well to the reassurance that death during such a panic is actually very rare.

### The Last Days of Life

Evidence-based guidelines have been produced by the National Council for Hospice and Specialist Palliative Care Services<sup>15</sup>, and these are recommended reading. Management in this terminal phase is based on the usual principles of palliative care:

1. Recognise that death is approaching.
  - Cancer patients experience increasing weakness and immobility, loss of interest in food and fluid, difficulty swallowing, and drowsiness. These signs usually develop gradually over several weeks—if the onset is very rapid consider a potentially reversible cause such as change in medication, hyperglycaemia, hypercalcaemia or infection.
2. Encourage participation by patient, family and friends.
  - Both in decision-making and in physical care, according to their views and wishes.
3. Continue collaborative multi-professional approach.
  - Refer to specialist palliative care early if you anticipate problems.
4. Assessment of patient's needs.
  - Focus on what the patient perceives as problems, rather than the perceptions of family, other staff and yourself.
  - Tailor questions to the patient's condition, but ask specifically about symptoms because these tend to be under-reported.
  - Non-verbal clues of distress may be present.
  - Examine any site of pain, the mouth, pressure areas, and other areas where clinical assessment suggests that there may be a problem.
  - Explore fears, misunderstandings and misapprehensions as appropriate.
5. Treatment of patient's symptoms.
  - The aim of all treatment is to control the symptoms which are distressing the patient.
  - Stop all other medication which does not fulfil this aim. Care is needed in explaining this to patient and relatives.
- Investigations and routine observations should also be discontinued unless there is a specific reason for continuing which will enhance comfort.
- Medication may need to be given subcutaneously (or rectally) as swallowing deteriorates.
- Appropriate prn medication must be prescribed for anticipated symptoms such as anxiety, agitation, pain, convulsions or noisy oropharyngeal secretions. This 'rattle' rarely distresses the patient but can be very distressing for others—consider treatment with hyoscine hydrobromide or butylbromide, or glycopyrronium.
- Many dying patients have a dry mouth for a variety of reasons—mouth breathing, drugs and poor fluid intake. However, no correlation has been found between biochemical evidence of dehydration and the symptom of dry mouth, and there is the risk with parenteral hydration of peripheral and pulmonary oedema. In practice, sc or iv fluids may be used if the patient complains, or their behaviour suggests, that they are thirsty and are unable to take sufficient oral fluid, but this is rare. Relatives often request discussion on this point, and careful explanation of the pros and cons of rehydration is required.
- Mouth care is very important. Relatives can help to keep the patient's mouth clean and moist with foam stick applicators, and dry lips are eased with vaseline.
- Skincare includes careful positioning and regular turning, gentle massage, and the choice of an appropriate mattress. A urinary catheter may also be required.
- Speak gently to the patient when you approach them, and explain what you are going to do. Even if the patient appears unconscious, hearing may persist.
6. Assessment of relatives' needs.
  - Time spent talking to relatives is much appreciated, to offer reassurance that the patient is comfortable and is being well cared for, and as an opportunity for relatives to ask questions that they might otherwise feel that they cannot bother you with.
7. Continued psychosocial support.
8. Care in different settings.

- Patients may be discharged to die at home. This requires careful planning, with the family and community services needing as much time as possible to prepare. Involve the GP, DN (and social services and palliative care team if appropriate) at an early stage.

*NB. When routine observations and unnecessary medication are discontinued there is the risk that the patient will be neglected. Substitute an alternative care plan, focusing on emotional support, as well as physical aspects such as mouth and skin care, and environmental factors such as a calm environment and the provision of food and drink (as required) within easy reach. Frail patients will need help with eating and drinking, particularly if they have few visitors, and everyone can help out here.*

## PSYCHOSOCIAL CARE

As we have seen, the principles of good psychosocial care are not specific to palliative care. The ability to communicate effectively with patients and their families requires sensitivity and skill—which we can all improve upon and refine with practise and training. We need to be able to elicit patients' concerns, permit the expression of emotion, and to clarify areas of uncertainty. We also need to be able to tailor the giving of information to the wishes and understanding of patients, particularly when this involves the imparting of bad news. Forming partnerships with patients in decision-making has been a recurring theme throughout this chapter, and patients particularly appreciate continuity of care from specific team members. Whilst establishing realistic goals, we also need to take time to foster hope.

How and why should we improve our psychosocial skills? Reading books can be interesting and informative, but lasting change is more likely to come from active participation via a process of reflective practice or attendance at relevant courses. Debriefing with a colleague after difficult interviews can be very helpful, particularly if they bring a different professional perspective. Similarly, we can all learn what to do, or not to do, by observing others. However, one of the most effective ways of improving our communication skills is to step back from everyday clinical practice and to go on a course in

which active participation is mandatory. The Cancer Research Campaign Psychological Medicine Group run evidence-based communication skills courses at the Christie Hospital, University of Manchester (Tel: 0161 446 3679). These three-day courses allow you to practise managing common scenarios, such as denial, collusion, breaking bad news, anger and fear. A more psychodynamic approach is favoured by The Tavistock Institute in London, who run a weekend and evening course over six weeks in 'A Psychodynamic Approach to Working with Cancer Patients' (The Tavistock Centre, Tel: 0207 794 1309). As well as honing skills for use with individual patients, the Tavistock course provides valuable insights into multi-professional team-working. Robert Buckman's chapter on 'Communication in palliative care; a practical guide', in *The Oxford Textbook of Palliative Medicine* is a good place to start.<sup>16</sup> Buckman's book on breaking bad news is also recommended.<sup>17</sup>

Once one's communication skills have improved, one understands why the effort was worthwhile: it is more satisfying, it saves time, and it is less stressful to be able to communicate well.

## Psychological Therapies

Anything which fosters participation, independence, and a sense of control and achievement is likely to foster psychosocial health. This should be the general climate of care, but specific therapies can be particularly beneficial. All professions allied to medicine have a role, and, in addition, art and music therapy may be available. Complementary therapies have an established role in palliative care in the promotion of general well-being and hope, and 'touch therapies' (such as therapeutic massage and aromatherapy) may alleviate anxiety. Some patients benefit from support groups, or from a course of counselling. Other psychotherapeutic interventions, such as cognitive-behavioural therapy, can be helpful but tend to be of limited availability.

## Depression and Anxiety

Estimates of the incidence of depression in cancer patients vary widely, but the finding that a major depressive illness occurs in about 5–10% of patients with advanced cancer, with depressive



symptoms in a further 10–20%, seems a reasonable estimate.<sup>18</sup> In this context, depression and anxiety can be seen to be a reaction to the multiple losses and uncertainties associated with a progressive, life-threatening illness. Both are compounded by, and aggravate, physical symptoms, which can make the diagnosis and management of all the symptoms more difficult. An added challenge is determining when appropriate natural sadness becomes depression, or when understandable anxiety becomes anxiety in need of pharmacological treatment. Jennifer Barraclough (1998) makes this helpful observation about depression and anxiety:

*“Although these might seem understandable, they differ in severity, duration, and quality from ‘normal’ distress. Depressed patients seem to loathe themselves, over and above loathing their disease. This manifests through guilt about being ill and a burden to others, pervasive loss of interest and pleasure, and hopelessness about the future.”*  
(Barraclough, 1998, pp.27–28)<sup>19</sup>

So, sensitivity and specificity in the diagnosis and treatment of these psychological symptoms is important but difficult. Signs and symptoms, and drug treatment, of anxiety and depression are covered elsewhere in this textbook. Counselling depressed patients can prove particularly unproductive, and it may be best to wait until antidepressants have had an opportunity to work before such discussions are resumed.

## Confusion

It is important to clarify the difference between an hallucination and a misperception. An hallucination is the perception of something that is not there, whereas a misperception is a faulty perception, perhaps because of clouded consciousness. For example, when a patient complains of seeing little green men, she could be hallucinating, or she could be describing but not recognising staff in theatre greens. It is a key difference because hallucinations may require treatment with antipsychotics, whereas these drugs could further befuddle a confused patient and increase their misperceptions. The treatment of someone troubled by misperceptions is

to remove the cause where possible, and to provide a calm and quiet environment where sensory stimulation may be reduced.

## Grief and Bereavement

There are a number of different theories about the grieving process. The idea that in bereavement one works through a number of sequential stages is no longer in vogue. Phases of grief are recognised, but different bereaved people move backwards and forwards through the phases at different times. Colin Murray Parkes has written extensively on grief and bereavement, and your attention is drawn to his work—again, his chapter in *The Oxford Textbook of Palliative Medicine* is a good introduction. Murray Parkes describes three major components to the reaction to bereavement: the urge to cry and to search for the lost person; the urge to avoid or repress crying or searching; and the urge to review and revise internal models. At different times grieving people may be in phases of numbness and blunting, pining and yearning, disorganisation and despair, and reorganisation and recovery.<sup>20</sup> Such bereavement reactions may also be seen in patients grieving for their multiple losses, including loss of healthy body image, role, function, relationships, and interests.

Approximately one-third of bereaved spouses will develop significant physical or mental health problems, and certain ‘at-risk’ groups have been identified.<sup>15</sup>

Risk factors which predict a poor outcome include:

- Death of a young person
- Low levels of trust in self or others
- Previous history of psychiatric illness
- Perceived lack of support or understanding
- Over-dependent relationship between bereaved people and the deceased.

It follows that good communication between health professionals and spouses and other carers can ease the bereavement reaction. When patients die unexpectedly or uncomfortably, opportunities for the bereaved family to discuss this with the health care team should be offered. Those at risk of a poor bereavement outcome can benefit from bereavement follow-up. Bereavement support

services are usually available locally, either by statutory or charitable services, but provision varies widely across the country. Be aware of the local situation—other team members or GPs may be able to direct you. It is also good practice to discuss the deaths of patients in hospital with their GP at the first available opportunity, as they may have early contact with the bereaved family.

Two useful addresses:

*Cruse Bereavement Care*, Cruse House, 126 Sheen Road, Richmond, Surrey TW9 1UR. Tel: 0208 940 4818 (admin), 0208 332 7227 (bereavement line, office hours).

*National Association of Bereavement Services*, 20 Norton Folgate, London E1 6DB. Tel: 0207 247 0617 (admin), 0207 247 1080 (referrals).

### Looking After Yourself

The key to managing stress in oneself and others is to recognise it in the first place. Everyone manages stress in different ways, and in the health service the onus is on you to find the support that you need. Team debriefing sessions after critical incidences can be helpful. Staff support groups are sometimes available, although opinion about their efficacy varies. Some clinical nurse specialists have regular clinical supervision, often away from their workplace, to provide a framework for reflective practice and improving management and personal coping strategies. Such supervision has not been part of medical culture (except in psychiatry) but an increasing number of doctors are exploring this avenue. The BMA also has a helpline to support doctors.

### ETHICS IN PALLIATIVE CARE

From the perspective of the media, the ethics of palliative care is frequently equated with debates regarding the morality of euthanasia. In fact, requests for euthanasia are rare, and much more time is spent pondering the ethics of clinical decision-making and team-working when patients are very frail and vulnerable. The nature of informed consent, and how confidentiality should be respected in palliative care,

are examples of these everyday considerations. The balance of benefits and burdens is as fine in ethical decisions as in clinical ones. For example, a 70-year-old man is admitted to a hospice for symptom control, and respite because his wife is exhausted. On arrival he is clearly moribund. In the past he has been adamant that he wants to die at home. What should you do?

An excellent, and somewhat controversial, analysis of ethics in palliative care from the perspective of everyday clinical practice is provided by Randall and Downie, *Palliative Care Ethics: A Good Companion*.<sup>21</sup>

*The Journal of Clinical Ethics* offers interesting, clinically based papers, with informed debate.

Geriatricians will be familiar with questions about withholding and withdrawing treatment (including the BMA guidelines 1999), and discussion of the nature of futility and consent with regard to cardiopulmonary resuscitation. Very brief notes are offered here on euthanasia and the doctrine of double effect.

### Euthanasia

*“...how important it is that life ends appropriately, that death keeps faith with the way we want to have lived.”*

(Ronald Dworkin, *Life's Dominion*, p.199).<sup>22</sup>

As with abortion, personal beliefs about euthanasia tend to be polarised, focusing as they do on what makes life sacred. Is life itself sacred (the sanctity of life), or is what makes our lives worth living ultimately the most important consideration? The philosophical arguments around euthanasia are covered well by:

Ronald Dworkin (1993) *Life's Dominion*. Harper Collins, and

Jonathan Glover (1997) *Causing Death and Saving Lives*. Penguin.

It is worth subjecting your own views to moral scrutiny, and to consider how you would approach the discussion around a request for euthanasia.

Specialist palliative care has traditionally presented a united front against the legalisation of euthanasia, with this stance formalised in the consensus statement of the National Council for Hospices and Specialist Palliative Care Services.<sup>23</sup>

The main grounds for this opposition are that:

- It is contrary to the philosophy of palliative care, which affirms life and regards death as a normal process
- Palliative care provision obviates the need for most cases of euthanasia
- It would threaten vulnerable members of society who might feel a real or imagined pressure to consider euthanasia, with the attendant risk of a ‘slippery slope’ into involuntary and nonvoluntary euthanasia.

This said, most palliative care practitioners are aware of patients whose suffering, usually existential in nature, is not relieved by palliative care and who request euthanasia. Legally, their wish cannot be granted. Morally, a key question is how respect for the autonomy of this person should be balanced with the autonomies of all else concerned, including other present and future patients, wider society and professionals. What do you think?

### Doctrine of Double Effect

*“The principle of double effect permits an act which is foreseen to have both good and bad effects, provided: the act itself is good or at least indifferent; the good effect is the reason for acting; the good effect is not caused by the bad effect; a proportionate reason exists for causing the bad effect, e.g. morphine for pain may shorten life.”*

(Boyd, Higgs and Pinching. *New Dictionary of Medical Ethics*, 1997, p.76).<sup>24</sup>

The doctrine is well rehearsed in the media and in the law courts, but many in palliative care would dispute whether the right dose of morphine, for the right indication, need shorten life, and there is no evidence that morphine is used in this way in hospices. The doctrine of double effect is more relevant to the use of sedation for an agitated patient at the end of life. Here there may be a fine line between the intention of effective symptom management, and the intention to end suffering by shortening life. The problem with the doctrine is that real intention can be so difficult to establish. Motive is the critical issue.

In clinical practice it is informative to apply the test: *If a treatment came along which fulfilled the aim without the secondary effect, would you use it?*

### RELIGIOUS AND CULTURAL CONSIDERATIONS

Ask patients and relatives about their cultural or religious observances and requirements before and after death, and plan accordingly. Within stated religious affiliations assumptions cannot be made because of varying commitment and practice. However, note that some people of Jewish or Islamic faith may wish to be buried within 24 hours of death, so the death certificate needs to be made available immediately. Ensure that there is a doctor available who can complete the certificate in the case of expected deaths. Special arrangements may need to be made with the coroner at weekends and on bank holidays.

When there are language barriers, advocates may be required. Decisions regarding the most appropriate interpreter for a particular patient will need to be decided on individually. Using young children in this role should generally be avoided. Family members will be the best advocates in some circumstances, but their relationship to the patient should be taken into consideration. Volunteer or paid advocates from the local community are often available, but may be unacceptable to the patient and family if the relevant community group is small and close knit (for confidentiality reasons). ‘Language lines’—three-way telephone services may be available in certain languages: make enquiries locally.

### ROLE OF THE CORONER

Most coroners require telephone reporting of deaths occurring within 24 hours of admission. In patients dying of advanced cancer this is usually a formality, and the coroner very rarely decides on a postmortem. If a patient has advanced cancer, or other advanced progressive disease, but the cause of death is unknown or uncertain, this should also be discussed with the coroner.

Other incidences in which a death should be reported to the coroner *include*:

- Patient not seen by a doctor after death, or within 14 days before death

- There is doubt about the death being due to natural causes
- Death was due to industrial disease (e.g. mesothelioma, bladder cancer due to certain industrial carcinogens) or poisoning (including alcohol)
- Death during surgery or in the perioperative period.<sup>25</sup>

*NB. If the cause of death involves information of a confidential nature, this need not necessarily be disclosed on the death certificate. Instead, on the back of the certificate you can tick the box marked 'more information may be available'. For example, in a patient dying of an opportunistic chest infection secondary to HIV, the cause may be declared as 'bronchopneumonia secondary to immunodeficiency'—provided that the box is ticked. However there is some disagreement among doctors and lawyers about this. It is, therefore, recommended that individual cases are discussed with the coroner.*

An informative booklet is available from the Benefits Agency of the Department of Social Security: 'What to do after a death in England and Wales'. This should be available to relatives, and is also worth reading yourself (HMSO, The Causeway, Oldham Broadway Business Park, Chadderton, Oldham, OL9 9XD).

## RESEARCH IN PALLIATIVE CARE

The methodological and ethical challenges inherent to research in palliative care include:

- Difficulty in defining appropriate endpoints. How do you *really* measure quality of life and quality of death?
- In assessing treatment efficacy, the progressive nature of the underlying disease complicates identification of symptom response. How do you decide cause and effect?
- Poor recruitment due to staff reluctance to recruit very frail patients, and difficulty of fulfilling entry criteria when the focus is on individualised care
- High attrition rate due to nature of patient group
- Informed consent in the very vulnerable
- Difficulty of obtaining suitable controls for assessment of service provision or symptom control research.

For these reasons, the available evidence in palliative care tends to be based on small-scale studies, short observational series and retrospective reviews. There are very few large-scale randomised control trials.

These deficiencies are now being addressed by the compilation of a number of systematic reviews of available evidence, and a focus on larger-scale, multi-centre trials. However, questions are also being asked about what *level of evidence* is required in palliative care.<sup>26</sup> The challenges faced by palliative care research actually reflect the very nature of our work, so in overcoming them and aspiring to gold-standard randomised controlled trials there is the danger that what we measure may not reflect the clinical situation. This is not a nihilistic position, rather a call to develop and defend new and appropriate methodologies.

There is plenty of scope for collaborative projects between specialist palliative care and other specialties, particularly in exploring the needs of patients with advanced, progressive non-cancer diagnoses. Those interested in such projects might find the following NCHSPCS document useful: NCHSPCS (1999b) *Knowledge to Care. Research and development in hospice and specialist palliative care.*<sup>27</sup>

There are a number of different palliative care journals. *Palliative Medicine* is a British-based multi-professional journal publishing original work. *The Journal of Pain and Symptom Management* is published in the US, and is also recommended. See your local medical library or hospice for others.

Information regarding palliative care literature is available from:

Halley Stewart Library at St Christopher's  
St Christopher's Hospice  
51 Lawrie Park Road  
London SE26 6DZ  
Tel: 0208 778 9252  
email: Denise@st.chris.ftech.co.uk

## OTHER USEFUL ADDRESSES

A comprehensive list of palliative care services and resources, patient support groups and information services, and charitable organisations may be found in the *Hospice Directory 2000*, published by The Hospice Information Service at St Christopher's.

Tel: 0208 778 9252. email: his@stchris.ftech.co.uk. This is an extremely useful resource book, and is already available on some hospital wards. If not, you might like to recommend it!

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## RECOMMENDED READING

**There are several symptom management books available, and the following are recommended:**

- Kaye (1994) *A–Z Pocketbook of symptom control*. EPL Publications, 41 Park Avenue North, Northampton NN3 2HT. ISBN: 0-9519895-1-0. Checklist of treatment options for symptom control.
- Regnard and Tempest (1998) *A Guide to Symptom Relief in Advanced Disease*. Hochland and Hochland Ltd, 174a Ashley Road, Hale, Cheshire, WA15 9SF. ISBN: 1-898507-38-4. Advice on clinical decision-making given on the basis of patient history. Comprehensive and pragmatic. For updates see: <http://www.clip.org.uk>.
- Twycross Robert (1997) *Symptom Management in Advanced Cancer*. 2nd edition: Radcliffe Medical Press, Oxon. Lecture notes format.
- Twycross, Wilcock and Thorp (1998) *Palliative Care Formulary*. Radcliffe Medical Press. ISBN 1-85775-264-3. A ‘comprehensive compendium of essential therapeutic information.’ Aimed at specialists, but a useful reference text for generalists.

There are also four information-packed pages on ‘Prescribing in palliative care’ at the front of the *British National Formulary (BNF)*.

- Marie Fallon and Bill O’Neill (eds) *ABC of Palliative Care*. BMJ Books, 1998.  
This is a practical and highly illustrated introduction to palliative care.
- Christina Faulk, Yvonne Carter and Richard Woof (eds). *Handbook of Palliative Care*. Oxford: Blackwell Science, 1998.  
A comprehensive and practical guide, aimed at the generalist audience.
- As a reference text and teaching resource, *The Oxford Textbook of Palliative Medicine*, edited by Derek Doyle, Geoffrey Hanks and Neil Macdonald (Oxford University Press) is extremely informative.

**SELF-ASSESSMENT QUESTIONS**

1. Reflect on the last three palliative patients that you have managed. What would you do differently?
  
2. Morphine (true/false):
  - a. should not be used in patients with renal failure because of the risk of respiratory depression.
  - b. causes constipation and therefore all patients should be prescribed lactulose.
  - c. causes dry mouth in the majority of patients
  - d. causes nausea and vomiting in most patients
  - e. should not be prescribed for chronic benign pain.



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# 11. Old age psychiatry

Sube Banerjee, Frances Wedgewood and Yvonne Ha

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## WHAT IS OLD AGE PSYCHIATRY?

Old age psychiatry deals with the mental health problems of elderly people. As a discipline, it is characterised by enthusiastic multidisciplinary and interagency working in response to the biological, psychological and social complexity presented by old people who are mentally ill. Old age psychiatry has a primary community focus, insisting on the importance of home-based assessment and care. The World Health Organisation (WHO) consensus statement on old age psychiatry has recently affirmed that assessments should be carried out in the patient's home. Unlike many principles, these appear to be the reality of clinical practice, with nine out of ten old age psychiatric referrals seen at home rather than in outpatient clinics.

People over 65 make up around a third of all mental health activity in the UK in terms of admissions, readmissions and community contacts. However, the profile of disorder and needs differs from younger age groups. The challenges presented by dementia and co-morbid physical illness and disability require particular professional skills, and services must deal with a complex mixture of social, psychological, physical and biological factors. The scope of old age psychiatry cannot be contained in this single chapter. This chapter is therefore selective, focusing on practical issues in the management of older adults with mental health problems.

## DEPRESSION

### Definition

- Depressed mood, or loss of interest, enjoyment or pleasure with the following for example (not

due to physical illness)

- Diurnal variation of mood
- Reduced concentration and attention
- Reduced self-esteem and self-confidence
- Bleak view of the future, hopelessness, helplessness, guilt, worthlessness
- Ideas or acts of self-harm or suicide
- Sleep disturbance, early morning wakening
- Appetite disturbance, weight loss
- Agitation or motor slowing

Severity of the disorder will be determined by the number, the frequency and impact of the depressed mood and these symptoms.

### Prevalence

Depression is the most common mental disorder in later life. Over the past fifteen years there has been a concerted research effort to describe and quantify the burden of depression in elderly people. Using psychometrically valid and reliable instruments, the prevalence of depression requiring clinical intervention in the over-65s in the UK is between 13% and 16%. In global terms, taking all ages, in 1990 depression was calculated to be the fourth highest in rank order of disease burden as measured in Disability-Adjusted Life Years (below lower respiratory infections, diarrhoeal diseases and perinatal conditions). The projections are for this to rise to second in rank order, behind ischaemic heart disease, in 2020.

There are high-risk groups for depression. The prevalence is higher in primary care attenders and in all forms of secondary care contacts (both in- and outpatients). The prevalence of depression in recipients of local authority home care services is twice (26%) that in the community in general,



including a four-fold excess of the most serious types. In residential care of all kinds, there is a high proportion of dementia, but up to 50% of residents have clinically significant problems with depression.

### Undertreatment

Only between 10 and 15% of these people with depression receive any active treatment for their depression. This finding is true for those on medical and surgical wards as well for GP attenders and community populations.

Current service activity can therefore be said to be failing older people with depression. There are discontinuities along the path from disorder to recognition to treatment in all health and social care settings. We need to understand these barriers to care better so as to formulate policy, service and clinical management plans to overcome them.

### Misconceptions About Depression

Major problems in mounting an effective response to the challenge of depression in old age are presented by the misconceptions (often sincerely and benignly held) of clinicians in primary and secondary care, social care staff, by the older people themselves and their carers and by society as a whole.

Common misconceptions concerning depression in old age include the following, that it is:

- Not a real disorder
- Inevitable
- A normal part of ageing
- Untreatable
- Unimportant in individual, clinical or service terms

All these statements are unsupported by research-based evidence.

#### *Depression in old age is a real disorder*

Depression is a serious disorder which occurs at all ages; it is as real an illness as rheumatoid arthritis, hypertension or dementia. It is a syndrome which has somatic, cognitive and behavioural symptoms

and signs. It has known predisposing, precipitating and perpetuating factors and a well-described course and outcome. There are specific treatments which can treat the disorder as successfully as most others in medicine, and a lot better than many. It is not the same as uncomplicated bereavement or normal sadness and unhappiness.

#### *Depression in old age is not inevitable*

Depression is a common disorder of later life but it is not inevitable. Beliefs concerning the inevitability of depression in old age are based upon ageist formulations of old age as a time of inevitable and irretrievable loss and decay, to which the only response could be profound depression. In the general population 85% of the elderly are not depressed. Even in high-risk groups with much physical illness, disability and handicap, such as those receiving home care and those in residential care, 74% and 50% respectively do not have depressive disorders.

#### *Depression is not a normal part of ageing*

If this were the case, then depression would increase with each five-year age group from 65. This does not occur. Depression is associated with physical disorders, disability and handicap and these all rise in frequency with age. However, this does not mean that depression is a normal part of ageing, but instead suggests ways of preventing and managing depression by addressing treatment needs in these areas. Similar misconceptions include beliefs that depression is a prelude to, or the same as, dementia.

#### *Depression in old age is treatable*

The evidence clearly points to this being a treatable disorder. There is no evidence that antidepressants or psychological therapies work any less well in older compared with younger people. There is evidence of the effectiveness of intervention even in what might be considered poor prognostic groups, such as disabled elderly people at home.

#### *Depression in old age is important*

Whether the viewpoint of the individuals with depression and their carers or that of health and social services is taken, depression is important in

clinical and economic terms. Depression causes a profound decrease in quality of life for people with depression and for their families and carers. Depression is also associated with suicide and, in addition to this, increased mortality (controlling for physical co-morbidity). People with depression use more health and social services than people without the disorder, even after controlling for levels of disability. The UK annual health and social care cost (not including the opportunity costs of carers) of depression in elderly people at home is about £1 billion.

### **Determinants of Depression in Old Age**

In each individual with depression there will be an interplay of the biological (e.g. physical illness, disability, genetic predisposition), the psychological (e.g. losses of individuals, function or home) and the social (e.g. supports available, financial and housing status). While it is helpful to try to understand these factors in detail in each case, a lack of complete understanding should not be a barrier to treatment. Causes may be more or less proximal to the onset of depression, and a factor of major importance seems to be disablement, specifically handicap. Handicap can be understood as the disadvantage imposed on a person with chronic disease as a consequence of their imperfectly organised environment. This appears to be of particular importance in depression in later life, and may suggest paths for intervention on a population and an individual level.

Factors of importance in depression in earlier life (such as being a woman and life events) appear to play a less prominent role in the aetiology of late life depression. Other factors of importance include: pain, low social contact, loneliness (as distinct from depression) and marriage (protective for men and a risk factor for depression in women). The extent to which the disablement directly attributable to depression itself predicts movement to hospital or residential care in itself is unclear.

### **Management of Depression in Old Age**

The evidence base for the treatment of depression in the elderly is growing but has large gaps, especially where evidence of effectiveness in real

clinical populations is sought rather than efficacy in the highly selected groups enrolled into drug trials.

Without specific intervention the natural history of depression in elderly people at home is bleak, with only 33% of older people at home recovering in a year, and less (25% in six months) in disabled groups. However, in the community at large people screened as depressed can be successfully and acceptably engaged and treated by old age psychiatric services and community nurses.

#### *Principles for the successful management of depression*

1. Vigilance for depression
2. Recognition of depression
3. Active management
4. Maximise physical function
5. Prescribe and enable concordance with antidepressants
6. Attend to social needs (often via social services)
7. Attend to psychological needs (e.g. bereavement, other losses)
8. Review

### **Choice of Antidepressant**

One of the difficulties in assessing the relative merits of newer antidepressants, such as the selective serotonin reuptake inhibitors (SSRIs), compared with older compounds, such as the tricyclic antidepressants (TCAs), is that frail elderly subjects and those with complex comorbidity are systematically excluded from drug trials. This means that there are no good data with which to assess the cost:benefit equation for those who might be most affected by the adverse effects of medication (eg side effects or drug interactions). However, most old age psychiatrists would use an SSRI as a first line treatment rather than TCAs.

### **When to Seek Specialist Help**

Just as not all older people with hypertension need to see a geriatrician, not all older people with depression need to see an old age psychiatrist. Referral may be indicated when:

- the depression is resistant to an adequate trial of antidepressants (i.e. at least 4–6 weeks at a therapeutic dose);
- there is concern about life-threatening behaviour (by extreme neglect, food refusal or suicidal ideas, plans or intent);
- there is diagnostic uncertainty;
- the depression is severe (including depression with psychotic features, e.g. hallucinations and delusions).

### Suicide and Deliberate Self-Harm

Suicide is an intentional, self-inflicted, life-threatening act which results in death.

#### *Incidence*

About 4,500 people commit suicide each year in the UK, compared with several hundred thousand acts of non-fatal deliberate self-harm. Across all age groups male suicides outnumber women. The suicide rate increases with age, reaching a peak in the mid-60s for women and a decade later for men. Drug overdosage accounts for half of suicides, the remainder resulting from more violent methods.

#### *Assessment and management of the suicidal patient*

This should establish the degree of current suicidal ideas, plans and intent and evaluate the risk of completing suicide (see Table 1). Factors associated with an increased risk of suicide are presented in Table 2.

Management is directed towards treating any underlying physical and/or psychiatric disorder. This may require hospital admission. Long-term management will involve improving coping skills

and attempting to resolve the personal or social problems that have led up to the act.

#### *Prevention*

Acts of deliberate harm should always be taken seriously in the elderly. They may need to be admitted to a medical or surgical ward for treatment of the results of the act of self-harm. Risk assessment should include the risk of absconding and completion of suicide on the ward. Appropriate levels of nursing observation should be instituted and a clear management plan should be set out in the notes. All older people completing an act of self-harm should be assessed by the psychiatric team; the degree of urgency of this assessment will depend on the patient's medical and mental state. Primary prevention has been aimed at improving ways of detecting the potential victim of suicide, increasing help available to those faced with social and emotional problems, and limiting the availability of prescribed drugs frequently used in suicide attempts.

### Key messages

#### *Depression in old age*

1. Is common (12–15% of the whole population)
2. Is serious (associated with profound decrease in quality of life, increased all cause mortality and suicide)
3. Increases service use (all health and social care)
4. Is expensive (estimates of £1 billion p.a. attributable to depression in the community)
5. Is treatable (60–70% may recover with active treatment compared with 25–30% with normal care)

**Table 1.** Indicators of suicidal intent.

- 
- Evidence of premeditation, such as hoarding tablets
  - Taking precautions to avoid discovery
  - Failing to alert potential helpers after the act
  - Carrying out the act in isolation
  - Performing 'final acts' such as writing a note or making a will
  - Violent methods (however, ignorance over lethal dosage means that intent may be high despite an apparently trivial overdose)
-

**Table 2.** Factors associated with increased risk of suicide.**Socio-economic factors**

Sex: male

Age: over 40

Work: unemployed or retired

Marital status: divorced, widowed or separated

Social network: living alone, lack of social support

**Mental and physical health**

Mental disorder: current psychiatric illness

Substance abuse: especially alcohol abuse

Physical disorder: chronically disabling physical illness, pain

Recent loss: bereavement, divorce, retirement, redundancy

Family history: affective disorder, alcohol abuse, suicide

Past history: mental disorder or deliberate self-harm

Personality: antisocial personality disorder (rare in the elderly)

**Mental state examination**

Thoughts: suicidal intent and thoughts

Depression: biological (e.g. sleep disturbance, diurnal variation of mood, weight loss, anhedonia) and cognitive features (e.g. hopelessness, helplessness, guilt, worthlessness) severe and psychotic depression

Abnormal perceptions: persecutory delusions, auditory hallucinations or delusions of control (esp. instructing or compelling the patient to kill themselves)

6. Is only rarely actively treated (only 10–15% of older people with depression are being treated)
7. Changes need to be made in the delivery and organisation of health and social services to enable depressed elderly people to receive active treatment.

include: changes in behaviour (excess and deficits), emotional control, and social functioning. Dementia is a clinical syndrome which may be caused by specific disease entities, the four most common of which are: Alzheimer's disease (AD), vascular dementia (VaD), Lewy body dementia (LBD) and frontal/frontotemporal dementia (FTD). The ICD-10 criteria for dementia are summarised in Table 3.

**DEMENTIA****Definitions**

Dementia is a syndrome in which there are cognitive and non-cognitive symptoms. The cognitive features include a sustained decline in memory and other intellectual functions occurring in clear consciousness. Non-cognitive symptoms

**Impact of Dementia**

Dementia is one of the most common and serious disorders in later life with a prevalence of 5% and an incidence of 2% per year in the over-65s. In the UK dementia therefore affects 500,000 people at

**Table 3.** Summary of ICD-10 criteria for dementia.

1. A syndrome due to disease of the brain, usually chronic (over 6 months duration) and progressive. Disturbance of memory and one or more other higher cortical functions (e.g. thinking, orientation, comprehension, calculation, learning, language and judgement)
2. No clouding of consciousness
3. Commonly accompanied by deterioration in emotional control, social behaviour and/or motivation
4. Usually interference with activities of daily living

any time, with 200,000 new cases a year. Dementia causes irreversible decline in global intellectual and physical functioning. There are profound impacts on the person with dementia, their family and carers, and also on health, social and voluntary services, in personal, social, health and economic terms. In the community dementia has been estimated to cost £2.4 billion per year. This doubles if the costs of residential care and carer opportunity costs are added. While the economics are striking, the negative impact of dementia on people with dementia themselves, in terms of deteriorating function, and on carers in terms of high levels of stress, carer burden and mental disorder is also enormous.

### Clinical Presentation of Dementia

The course and particular symptoms of dementia depend on the diagnosis and patient characteristics such as co-morbid physical disorder and personality. Patients may complain of forgetfulness, decline in mental functioning, or feeling depressed but may be unaware of memory loss. Patients and family may sometimes deny or be unaware of severity of memory loss and other deterioration in functioning. The diagnosis of dementia may therefore be an incidental finding or may result from families asking for help because of failing memory, disorientation, self-care, change in personality or behaviour. In the later stages of the illness they may seek help because of behavioural disturbance, wandering or incontinence or an episode of dangerous behaviour (e.g. leaving the gas on unlit). Dementia may be diagnosed first during consultations for other problems, as patients and relatives may believe deterioration in memory and function to be a natural part of ageing. Changes in behaviour and functioning, (e.g. poor personal hygiene or social interaction) in an older patient should raise the possibility of a diagnosis of dementia.

### Alzheimer's Disease

AD is the most common of the dementias, accounting for between a half and three-quarters of all cases. It can be divided into early-onset (before 65 years) and late-onset (after 65 years) sub-types.

Early onset AD is very rare compared with late-onset AD, constituting under 1% of all cases of AD. Early onset disorder generally has a stronger and more simple genetic component than late-onset AD, with more aphasia, apraxia and a more rapid course with poorer survival. Given the heterogeneity of potential genetic and environmental aetiological factors, it is probably best to think of the *Alzheimer diseases* with multiple pathways to a diffuse clinical syndrome rather than a single disorder.

Onset in AD is usually insidious, with gradual sustained deterioration in cognitive and non-cognitive function. Diagnosis is generally made by informant report of gradual onset and deterioration, with the exclusion of other causes of dementia. Cognitive features include memory problems, especially for recent events in early dementia, aphasia, apraxia and agnosia. Delusions and hallucinations occur in up to 15% of clinical samples. Depressive symptoms may also be present.

### Vascular Dementias

Vascular dementia is the second most common cause of dementia. It can be divided into three main sub-types:

- Multi-infarct dementia: numerous small areas of cortical damage
- Mono-infarct dementia: in a strategic area, e.g. thalamus, angular gyrus
- White matter damage: e.g. lacunar infarcts, Binswanger's disease (if it exists)

The presentation of vascular dementia is variable and depends on the nature and extent of the neuronal damage. However, features such as sudden onset of cognitive deficit, early gait disturbance, falls and pseudobulbar palsy are suggestive of a vascular cause. Hachinski and colleagues proposed a scoring system to attempt to determine whether dementia has a primarily degenerative or vascular origin, with a score above six suggesting a vascular dementia (see Table 4). This is not a diagnostic test and is perhaps most usefully considered as a mnemonic device to aid the completeness of assessment.

**Table 4.** Hachinski ischaemia score.

Abrupt onset	2
Stepwise deterioration	1
Fluctuating course	2
Nocturnal confusion	1
Relative preservation of personality	1
Depression	1
Somatic complaints	1
Emotional incontinence	1
History of hypertension	1
History of strokes	2
Atherosclerosis	2
Focal neurological symptoms	2
Focal neurological signs	2

### Lewy Body Dementia

The concept of LBD was prompted by the identification of neocortical and brainstem Lewy bodies (phosphorelated neurofilament proteins crosslinked into dense insoluble complexes) in people with dementia at post mortem. Lewy bodies are an important histological feature of several neurodegenerative diseases, most typically Parkinson's disease. Clinical features of LBD are summarised in Table 5.

The cognitive impairment of LBD typically fluctuates with episodic confusion and lucid intervals. Additional features include visual or auditory hallucinations, parkinsonian symptoms and repeated falls or transient clouding of consciousness. Treatment with L-dopa or anti-parkinsonian medication may improve the motor symptoms but can worsen the confusion and hallucinations. These patients may be extremely sensitive to anti-psychotic medication and severe adverse effects (including death) have been reported from normal doses.

**Table 5.** Criteria for Lewy body dementia.

1. Pronounced fluctuating impairment of memory and higher cortical function (e.g. language, praxis, reasoning) with episodes of confusion and lucid intervals.
2. Visual or auditory hallucinations often with secondary delusions; and/or spontaneous extrapyramidal symptoms or high sensitivity to anti-psychotics; and/or unexplained falls  $\pm$  transient clouding of consciousness.
3. Clinical features persist over weeks or months, unlike delirium, and there is progressing cognitive decline overall.
4. Exclusion of explanatory physical disorder.
5. Exclusion of vascular aetiology.

**Thus care should be taken in prescribing for people with LBD and anti-psychotic drugs should be avoided.**

### Frontotemporal Dementia

In frontotemporal dementia, patients will typically present with personality change and behavioural problems. Compared with AD, dysphasia develops later and memory is affected later and less severely. Onset is often insidious and progression slow. There may be marked disinhibition, hyperorality, distractibility and stereotyped behaviour. Spatial orientation may be well preserved even in late disease while insight is generally lost early. Neuropathologically there is atrophy of the frontal and temporal lobes without AD pathology. Pick's disease is a frontal dementia.

### Other Causes of Dementia

Dementia may rarely be a result of: hypothyroidism, normal pressure hydrocephalus, vitamin B12 or folate deficiency, Wernicke-Korsakoff's syndrome, progressive supranuclear palsy, neurosyphilis, Huntington's disease, HIV, hypercalcaemia and Creutzfeldt-Jakob disease.

### Inaccuracy of Diagnosis

The diagnosis of the particular sub-type of dementia will usually only be able to be confirmed at post mortem by neuropathology of brain tissue, and only then if appropriate techniques are used. There is a major degree of overlap between the sub-types of dementia detailed above, and an individual may have more than one type of pathology. This may be

incidental (e.g. vascular disease, parkinsonism and AD are all relatively common in older people) or may reflect shared aetiology (e.g. vascular risk factors for AD). It is therefore useful not to be too dogmatic about diagnoses and the likely course and prognosis of the disorder in an individual since there is much overlap of pathology and individual variation in the experience of dementia.

### Dementia Assessment and Care

Appropriate management depends on an accurate and comprehensive assessment of the patient and identification of needs so that a plan can be formulated. Given the nature of the cognitive deficits in dementia and the commonness of a lack of insight into them, taking an informant history to determine the nature of problems and the course and timescale of their development is vital. This may be time-consuming but any assessment is incomplete without such information, which is needed to determine the diagnosis, and to exclude depression and delirium. The assessment therefore must include:

- History and progression of symptoms
- Mental state examination (to identify depression and psychosis)
- Physical examination
- Investigations
- Level of social support
- Capacity to carry out activities of daily living
- Behavioural disturbances, dangerous behaviour (e.g. aggression, disinhibition, wandering, unsafe use of heaters/cookers)
- The input, needs, and physical and mental health of carers.

Screening tests such as the Abbreviated Mental Test Score or the Mini-Mental State Examination are often used in clinical practice. However, it is important to remember that **these are screening tests, not diagnostic instruments** and that their output is only of use when followed up by an appropriate clinical diagnostic process.

Investigations are designed to identify potential reversible causes for the dementia and the presence of complicating physical disorder. Routine tests would include: FBC, U+Es, LFTs, TFTs, B<sub>12</sub> and folate, glucose, syphilis serology and urinalysis. Structural brain imaging (e.g. CT or MRI) will

generally be indicated when there is a suspicion of intracranial tumour, focal neurology, fits, head injury, evidence of normal pressure hydrocephalus, or an unusual course or rapid progression. The role of EEG and functional imaging (e.g. SPET, PET or fMRI) tends to depend on local availability and skills as well as the clinical picture presented by the person with dementia. More important are an informant interview, an occupational therapy home assessment of function and safety, and an assessment of the patient and carer by social services.

Burns and Hope have proposed a simple four point structured approach to the management of people with dementia (DIPS: dementia, illness, problem and support):

- Dementia: treat the cause where possible
- Illness: treat concurrent illness
- Problem list: identify and tackle each major problem
- Support supporters: including information and support groups

Effective management of dementia requires that the clinician take a pragmatic and inclusive approach rather than take refuge in a narrow construing of the medical role. The task will involve the orchestration and integration of multidisciplinary and interagency assessment in order to develop and deliver an effective acceptable and sustainable care package.

### Management of Behavioural and Psychiatric Symptoms

Depression in dementia should be treated as described for depression. TCAs may be even less appropriate than SSRIs because their anticholinergic side effects may further impair cognitive function. Similarly, psychosis in dementia also needs to be treated as for psychosis in elderly patients generally, though often at lower doses. Newer atypical psychotics (e.g. olanzapine, risperidone) may have fewer side effects in dementia.

Medication should only be used when necessary and appropriate; non-pharmacological methods of dealing with difficult behaviour should be explored first. For example, carers may be able to deal with

repetitive questioning if they are given the information that this is because of the dementia affecting the patient's memory.

Antipsychotic medication in very low doses (see BNF section 4.2.1) may sometimes be needed to manage behavioural problems (e.g. aggression or restlessness). Behavioural problems change with the course of the dementia, so medication should be reduced or withdrawn every few months as a trial to see if it is still needed and discontinue it if it is not. Beware of drug side effects (parkinsonian symptoms, anticholinergic effects) and drug interactions (avoid combining with tricyclic antidepressants, alcohol, anticonvulsants or L-dopa preparations). **Antipsychotics should be avoided in Lewy Body dementia.**

Sedative or hypnotic medications (e.g. benzodiazepines) should be avoided if possible since they may increase confusion. If other treatments have failed and severe management problems remain, use very cautiously and for no more than two weeks. However, abrupt withdrawal of benzodiazepines from those who have been on them for some time should be avoided since this may cause serious withdrawal syndromes (including increased confusion, agitation, fits and aggression).

### Anti-dementia Medication

Donepezil was licensed in the UK in 1997 and other compounds have followed. There are limited data on efficacy, less on effectiveness, and a particular lack of quality of life and economic data. The health service response has been patchy with some health authorities providing funding while neighbouring authorities do not. These drugs increase synaptic levels of acetylcholine to maximise cognitive function. While the effects of these compounds are modest and they do not affect the underlying disease process, there is continuing investment in the development of new drugs to treat the dementias with the goal of finding compounds to halt or reverse dementia.

### When to Refer to Old Age Psychiatry

Geriatricians should be able to make accurate diagnoses of dementia. Referral to old age psychiatry,

neuropsychology or a memory clinic may be indicated in complicated or atypical cases. Referral to old age psychiatric services may be useful if there are intractable behavioural problems, unusually complex family relationship difficulties or if depressive or psychotic episodes do not respond to an adequate course of treatment.

### Carer Burden

As dementia progresses, patients require increasing help with self-care and other aspects of their daily functioning. The burden of care usually falls on family members who tend to be elderly themselves (often co-resident spouses) and are twice as likely to be women than men. Most of the caring role is carried out by one relative with others helping, with the tasks rarely equally shared out. Caring for people with dementia is stressful and carers have poorer physical and mental health than age-matched controls.

The effect of caring on the carers depends on the characteristics of the carer as well as the person with dementia. However, it is possible to identify four main sources of stress and burden:

1. **Practical**—need for help with personal care and housework.
2. **Behavioural**—examples include active problems (e.g. aggression, wandering, night disturbance, incontinence) and passive problems (e.g. apathy, decreased social interaction) which may be particularly difficult to deal with.
3. **Interpersonal**—difficulty in communication and change in the nature of the relationship with the person with dementia.
4. **Social**—restrictions on the carer leaving the home, socialising or going to work.

Home care, support groups (e.g. those run by social services, the Alzheimer's Society and other voluntary organisations—contact local social services and Alzheimer's Society branches for details), respite care and individual counselling can provide help with caring activities. However, results from formal studies evaluating their effect on carer burden and health have been equivocal, though this may be a function of study design. Placement in residential care may be a positive step for the person



with dementia and carers, but the quality of care received is a major source for concern.

## DELIRIUM

### Clinical Features

Delirium is an acute organic mental syndrome, characterised by fluctuating global cognitive impairment, with disturbance of attention, level of consciousness, psychomotor activity, perception and sleep-wake cycle. The disturbance of the level of consciousness can range from reduced wakefulness or even stupor to severe insomnia and hyperarousal. The American Psychiatric Association's criteria for delirium are summarised in Table 6.

### Incidence and Prevalence

Because of the brevity of its duration, delirium is not common in community prevalence surveys. However, it is relatively common in hospital. Up to 40% of elderly patients may experience delirium during any admission to hospital. Postoperative delirium occurs in 10–15% of elderly surgical patients and in about 50% of those who have surgery for fractured neck of femur. Delirium is important because it may constitute a presenting feature of a potentially life-threatening illness or drug intoxication. There is also the risk of self-injury for the patient and the development of delirium results in a longer hospital stay.

### Aetiology

Once the syndrome has been diagnosed, a search for its underlying cause or causes should begin.

Common precipitating factors include: heart failure, pneumonia, UTI, cancer, uraemia, malnutrition, dehydration and stroke. Withdrawal from alcohol and/or sedative hypnotic drugs is another important factor. Table 7 summarises some of the more common causes of delirium in elderly patients.

### Differential Diagnosis

The diagnosis of delirium is rarely a problem when the underlying disorder or an informant history is clear. Delirium should be distinguished from a functional psychosis, such as schizophrenia, mania and depression, in the course of which some patients may display cognitive impairment as well as perceptual abnormalities. In these cases, primary mental disorder may be suggested by inconsistencies in cognitive testing, the presence of depressive or manic features, and no evidence of physical illness. Distinguishing delirium from dementia may be more complex in a patient where there is no readily available history and also the two conditions frequently coexist. The key to assessment is the exclusion of physical disorder causing delirium allied with a collateral history and ward-based observation to enable an assessment of the onset, duration, course, and level of consciousness.

### Management

Wherever possible, prevent delirium by avoiding polypharmacy. The very old, the demented, and those with impaired hearing and vision are all at increased risk of delirium. Starting drugs in these groups should be accompanied by vigilance for

**Table 6.** Diagnostic criteria for delirium.

- 
- Disturbance of consciousness (i.e. reduced clarity of awareness of the environment) with reduced ability to focus, shift, or sustain attention.
  - Change in cognition such as memory deficit, disorientation, language disturbance or the development of perceptual disturbance that is not better accounted for by a pre-existing, established, or evolving dementia.
  - The disturbance usually develops over a short period of time (hours or days) and tends to fluctuate during the course of the day.
  - There is evidence from history, examination, or investigations that the disturbance is caused by the physiological consequences of a medical condition.
-

**Table 7.** Some causes of delirium in the elderly.

- 
1. **Systemic illness:** myocardial infarction and cardiac arrhythmias, congestive cardiac failure, renal, hepatic or pulmonary failure, neoplasms, infection (especially urinary tract), burns, surgery and multiple trauma, SLE, AIDS
  2. **Metabolic disorders:** electrolyte disturbances, hypoglycaemia, hypercalcaemia, hypothyroidism, hyperadrenalism, hypoadrenalism
  3. **Neurological disorders:** stroke, TIA, vasculitides, subdural or subarachnoid haemorrhage, meningitis, neurosyphilis, head injury, space-occupying lesion, seizure
  4. **Intoxication with prescribed and non-prescribed drugs:** anticholinergics, antipsychotics, antihypertensives, antiarrhythmics, diuretics, NSAIDs, hypoglycaemic agents, sedatives/hypnotics, narcotics, cimetidine, digoxin, lithium, L-dopa
  5. **Drug withdrawal:** e.g. from alcohol, benzodiazepines or barbiturates
- 

prodromal symptoms including: insomnia, vivid dreams, anxiety, restlessness and transient hallucinations.

Management first involves identifying and treating the underlying disorder. Supportive measures are also important (see Table 8). Symptomatic treatment with low doses of oral or intramuscular haloperidol may be necessary but beware of extrapyramidal side effects. Benzodiazepines can be used in alcohol and some drug withdrawal and in hepatic encephalopathy.

### MANAGEMENT OF BEHAVIOURAL PROBLEMS

Behavioural problems in elderly patients may occur in delirium, dementia, depression and paranoid states. A detailed assessment of the patient and a history from an informant is necessary to help to identify the cause. Treatment of the underlying condition such as depression or delirium may resolve the difficult behaviour.

In dementia, some of the most problematic behaviours to deal with are aggression, wandering, nocturnal restlessness, sexual disinhibition and

uncooperativeness. Common problematic behavioural difficulties are anger, irritability and resistance to help during personal care such as washing and dressing. Other aggressive behaviours include biting, scratching, kicking and hitting. However, overt violent behaviour causing serious injury is rare. Aggression will often respond to skilled nursing care, maintaining an unhurried, friendly and respectful manner during interaction. A behavioural approach may also reduce disturbance and distraction may be helpful. The effectiveness of anti-psychotic drugs is unclear and seems to be mediated through sedation, which may have other unwanted effects.

The term “wandering” is used for a variety of behaviours. These include pacing within the house, walking around inappropriately at night, trailing behind the carer and venturing outside the home. Some causes of wandering are:

- Boredom and lack of stimulation
- Lack of exercise
- Habit
- Goal-oriented behaviour (e.g. wanting to go to the shops or home)
- Pain or discomfort.

**Table 8.** Management of delirium.

- 
1. Treat or remove the underlying cause(s)
  2. Ensure optimal nutrition, fluid and electrolyte balance, and vitamin supplementation if indicated
  3. Supportive and orienting nursing care in quiet, well-lit environment
  4. Allow trusted family member to stay with patient
  5. Monitor mental state and behaviour closely and avoid physical restraint
  6. Short-term prescription of a short-acting hypnotic may be useful if there is marked sleep disturbance
  7. If behavioural disturbance persists or is dangerous, consider treatment with an antipsychotic in a low dose (e.g. haloperidol)
-

Patients are most at risk when the wandering takes them outside where they may be vulnerable to traffic, the weather, assault or abuse. A more structured and full programme of activities during the day may reduce such behaviour. The fitting of locks whose action the person with dementia is unfamiliar with may help. However, such measures restrict the patient's freedom and this needs to be balanced against maintaining safety. If dangerous wandering persists, then this may lead to residential placement where safety can be maintained by the 24-hour provision of staff to supervise the patient. The use of sedative medication to attempt to prevent wandering can be problematic since it increases the likelihood of adverse events such as falls.

In dementia, the sleep-wake cycle is often disturbed, with patients becoming more agitated or active at night. In some the cycle is reversed, with the patient awake all night and asleep during the day. This can be extremely tiring and draining for the carers. "Sundowning" refers to behavioural difficulties worsening towards the end of the day. Sleep disturbance can also be a sign of depression. A first step is to attempt to limit daytime sleep and to promote interesting and enjoyable activities during the day. Simple sleep hygiene measures such as avoiding tea and coffee before bedtime can be helpful. If they fail, medication may be required, with the choice lying between a low dose of a sedative antipsychotic, a sedating anti-depressant where depression is a possibility, or a short-acting hypnotic (however, this may result in increased nocturnal confusion and the likelihood of falling).

With any intervention, the management plan should be discussed with the patient and carer to ensure it is acceptable to all parties. Sometimes, the patient may reject services offered (such as day care or respite) or refuse help and treatment. When such situations arise, it is best to explain the plan clearly and calmly to the patient. Confrontation is seldom helpful. Often the only way of finding out if the patient will accept a service is for it to be provided for a trial period and then to see whether the patient complies with it.

Where behaviour disturbance is severe the input of a psychologist to develop a formal programme of behavioural modification may be helpful. The principles of psychological behavioural intervention are helpful for anyone formulating a plan to address behavioural problems. One approach is an ABC analysis (Table 9), in this the

**Table 9.** ABC analysis of behaviour.

A	Observe the <i>antecedents</i> of the behaviour, i.e. when and where it takes place, what the person was doing immediately before and what else was happening at that time
B	Obtain a precise description of the <i>behaviour</i>
C	Identify the <i>consequences</i> of the behaviour, i.e. how the patient, the carer and others respond

precipitants of the undesirable behaviour, details of the behaviour and its consequences are recorded and monitored.

Interventions can then be developed from the information gathered. The aim is to reduce the known precipitants of the troublesome behaviour, and to alter the response of others to the behaviour. Often a combination of both these approaches is useful. The effect of the intervention is then evaluated through further behavioural analysis and the approach modified according to the patient's response.

## ALCOHOL ABUSE

### Introduction

Covert alcoholism in old age is a growing problem. Uncontrolled alcohol use leads to isolation, loneliness and despair. It is a chronic disease that takes time to manifest itself and needs time for recovery. Just as with younger age groups, successful treatment of alcohol abuse in elderly people will result in fewer medical problems, fewer attendances at casualty departments and a longer period of independent living. In short, there are many good reasons to diagnose and attempt to treat it and few to ignore it.

### Clinical Features

Clarity in management is not helped by the many terms used in connection with alcohol abuse. In the WHO's ICD-10 classification 'harmful drinking' is defined as a pattern of alcohol use that causes damage to physical or mental health. It is considered as milder in severity to 'alcohol dependence' whose characteristics are set out in Table 10.

**Table 10.** WHO criteria for alcohol dependence.

1. Compulsion to drink
2. Difficulty in controlling drinking behaviour
3. Physiological withdrawal state on stopping or reducing intake
4. Evidence of tolerance
5. Progressive neglect of other pleasures
6. Persistence despite evidence of harm

Alcohol dependence may result from self-medication to deal with the symptoms of chronic illness—for example, taking alcohol to help with sleep or to mask pain. The presentation of alcohol problems in old age is often subtle and may mimic other illness. Non-specific features include self-neglect, depression, confusion, falls, erratic behaviour, malnutrition, muscle weakness, gait disturbance and incontinence. Hypertension, atrial fibrillation and peripheral neuropathy should always prompt an inquiry into drinking patterns. A thorough review of psychiatric symptoms and a cognitive examination are necessary since there may be associated depression (including suicidal behaviour) and dementia. Alcoholic hallucinosis may be mistaken for schizophrenia or mania. Reversible states of confusion may mimic dementia and the Wernicke-Korsakoff syndrome (see below) and alcoholic dementia must be distinguished from Alzheimer's disease. As drinkers frequently conceal the extent of their problem, the clinician needs a high index of suspicion and an informant history can be very helpful. The CAGE questionnaire (Table 11) is a commonly used general screen.

### Prevalence

Estimates of the prevalence of alcohol dependence in the over-65s range from 1% to 3%. This may be an underestimation since case ascertainment on the basis of self-report and the number of drinks taken a day may miss dependent patterns of drinking and do not account for the lower alcohol tolerance experienced by elderly people. Men are more often affected than women. In some cases, the problem drinking begins for the first time in later life (late-onset), while in others it is a continuation of earlier

**Table 11.** CAGE questions.

- Have you ever felt you should **C**ut down on your drinking?
- Have you ever felt **A**nnoyed by criticism of your drinking?
- Have you ever felt **G**uilty about your drinking?
- Have you ever taken an **E**ye-opener first thing in the morning?

drinking behaviour (early-onset). The two sub-groups have different characteristics (Table 12).

### Diagnosis of Alcohol Dependence Syndrome

1. **Tolerance:** this refers to the need for more alcohol to produce the same effect as was originally achieved with less. In an older individual, this is best determined by taking a careful history of the patient's drinking pattern before and after alcohol became a problem, as tolerance may be achieved at a much lower level than in a younger person.
2. **Withdrawal:** as tolerance increases, a rapid drop in blood alcohol results in withdrawal, starting 6–12 hours after the last drink. Drinking brings **relief** from the symptoms and there may be a **narrowing of the drinking repertoire** (restriction to one or two familiar sources of alcohol whose effects can be predicted) to help to avoid withdrawal. Hyperreflexia or ankle clonus may be suggestive of impending seizure and rapid treatment of withdrawal should be considered.

**Table 12.** Characteristics of early- and late-onset alcohol dependence.

Early-onset	Late-onset
Family history of alcohol misuse	Greater premorbid psychological stability
History of smoking	Higher socio-economic class
Greater alcohol intake	Less pervasive problems from alcohol
More severe	An obvious precipitant, e.g. bereavement

3. **Loss of control:** most dependent patients experience a point of no return beyond which their drinking is relatively uncontrollable. There may be a **prominence of drink-seeking behaviour** at the expense of other activities. Drinking after a period of abstinence results in rapid **reinstatement** of the dependence syndrome.
4. **Social decline:** absenteeism from normal pursuits, marital conflict, accidents, criminal acts and vagrancy become increasingly likely.

### Signs of Withdrawal

- Tachycardia
- Tachypnoea
- Hypertension
- Tremor and perspiration
- Nausea and vomiting
- Low-grade pyrexia
- Profound anxiety

### Short-term Stabilisation and Management

1. **Stop alcohol intake.** Withdrawal from alcohol should usually take place as an inpatient on a medical ward or specialist unit. Outpatient withdrawal is only advisable if the patient is highly motivated and supported.
2. **Relief of withdrawal symptoms.** Longer-acting benzodiazepines such as diazepam or chlordiazepoxide are the drugs of choice. Doses must be carefully titrated in the first 24–48 hours of withdrawal to avoid oversedation and undertreatment. The dose can be reduced by one-third daily over the next 2 or 3 days and then stopped completely.
3. **Restoration of fluid and electrolyte balance**
4. **Administration of parenteral B vitamins**
5. **Prompt treatment of seizures and delirium.** This is a medical emergency and intensive care may be needed. The characteristics of delirium tremens are set out in Table 13.

### Complications of Alcohol Dependence

The effect of alcohol is pervasive. Some of the main complications of alcohol abuse are summarised in Table 14.

**Table 13.** Characteristics of delirium tremens.

- 
- Disorientation and confusion
  - Visual and tactile hallucinations
  - Autonomic hyperactivity
  - Seizures
  - Mortality up to 10–15% if untreated
- 

Wernicke's encephalopathy, characterised by ophthalmoplegia, ataxia and delirium, is a medical emergency caused by an acute deficiency of thiamine and its treatment includes intravenous administration of thiamine. Treatment delay increases the risk of permanent damage with Korsakoff's psychosis where there is irreversible apathy, inability to learn or form new memories, loss of insight and confabulation.

### Long-term Management

After detoxification the hard work of long-term treatment begins. Experience with this age group suggests that a low-key, supportive approach is the most effective intervention. Other family members should be involved in the process as much as possible. Four key areas have been identified that are associated with a likelihood of abstinence.

1. The time spent drinking must be replaced with substitute activities with other people that do not involve drinking. This may be self-help groups, therapy groups, voluntary or community interests.

**Table 14.** Medical and neuropsychiatric complications of alcohol dependence.

- 
- Vitamin deficiencies (e.g. B & C)
  - Infections
  - Cancer, especially of the gastrointestinal tract
  - Liver disease
  - Heart disease
  - Drug interactions
  - Acute intoxication
  - Withdrawal syndrome
  - Wernicke-Korsakoff syndrome
  - Alcoholic cerebellar degeneration
  - Alcoholic hallucinosis
  - Morbid jealousy
  - Alcoholic dementia and cortical atrophy
-

2. Successful abstainers often find a source of increased self-esteem or hope in their lives. Some may find this in religion or the 'spiritual' concept of sobriety in Alcoholics Anonymous.
3. A sustaining, rehabilitative relationship such as with a spouse, a physician, an AA sponsor, or a psychotherapist produces longer abstinence.
4. There can be a role for negative reinforcers of drinking, such as the threatened loss of a driving licence, or episodes of pancreatic pain. Disulfiram is not generally recommended in the elderly.

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# 12. Rehabilitation

**John Young**

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Rehabilitation is the most powerful intervention at your disposal to help disabled older people. However, specialist registrars often find it a difficult topic and this chapter will require your full attention. It is designed as a study guide to provide understanding rather than dry knowledge.

## **REHABILITATION AND GERIATRIC MEDICINE**

It may come as a surprise to some specialist registrars that geriatric medicine is a relatively new specialty. Less than five decades ago society's main response to sick older people was the institution of the workhouse in which chronic sick languished in the most miserable of circumstances. Into this arena stepped the early pioneers of our speciality. Their contributions were based on a new enthusiasm for older people, common sense and a systematic approach. They developed simple principles which we would still recognise today as the process of rehabilitation. Thus, at the inception, geriatric medicine and rehabilitation for older people were inextricably intertwined.

## **EFFECTIVENESS OF REHABILITATION FOR OLDER PEOPLE**

### **The Marjorie Warren Experiment**

Marjorie Warren has been referred to as "the Mother of Geriatrics". She was given responsibility for the West Middlesex County Hospital (previously a workhouse) with several hundred chronically ill, bedfast older people. She developed a highly successful process of care: rehabilitation. A summary of her work is given.<sup>1,2</sup> These days we have become accustomed to small treatment effects

requiring large trials to demonstrate effectiveness reliably. What if a treatment is so powerful that even an inauspicious situation (bedridden incurables) and a crude outcome (hospital discharge) can be unequivocally influenced? So it was with Warren's new process of rehabilitation.

### *The Marjorie Warren Experiment*

Objective:	To improve the health of disabled older people
Setting:	The Poor Law Infirmary of the West Middlesex Hospital in 1935 ("an ill assorted dump ... large wards which are devoid of any signs of comfort or interest")
Subjects:	714 chronic sick, bedridden "incurables"
Design:	Unblinded, uncontrolled, retrospective study
Intervention:	Rehabilitation, comprising: —individual patient assessment —team working —environmental modifications
Primary outcome:	Hospital discharge
Outcome results:	514 ("incurable") patients discharged (and subsequently beds closed)
Conclusion:	Rehabilitation is a powerful intervention for bedridden older people.

### **"Comprehensive Geriatric Assessment" (CGA)**

Although geriatric medicine and rehabilitation were originally conceived and implemented



nationally in the UK, much of the effectiveness evaluation has been conducted in North America. The effectiveness studies have been summarised in a systematic review and meta-analysis. The studies (UK n=8; N. America n=15; Others n=5) are diverse randomised trials but have as a common thread an evaluation of ‘comprehensive geriatric assessment’: a core process characterised by multidisciplinary assessment and treatment. The pooled estimates of effectiveness across a range of outcome measures were encouragingly positive. The best effects were obtained for CGA delivered by hospital-based elderly care departments in which the assessment process and subsequent interventions were integrated and when organised post-discharge follow-up was arranged.

	Hospital Geriatric Unit vs. Alternative Care Odds Ratio (95% confidence limits) at 6 months
Living at Home	1.8 (1.28–2.53)
Reduced Mortality	0.68 (0.45–0.91)
Improved Physical Function	1.63 (1.00–2.65)
Improved Cognitive Function	2.0 (1.13–3.55)

(From: Stuck *et al.*, *Lancet* (1993)<sup>3</sup>)

### The “Black Box” of Rehabilitation

A recent report identified a staggering 35 systematic reviews for rehabilitation topics of relevance to older people. Reviews were available for back pain, neck pain, diabetes, fractured neck of femur, occupational therapy in nursing homes, chronic pulmonary disease, cardiac rehabilitation, falls and stroke. However, these reviews disguise an important general deficiency in our knowledge. They largely describe the effects of complex, multi-component interventions; sometimes called *packages* of care. But what item, or items, has greatest effect? The concept “black box” has become a fashionable term to indicate our imprecise understanding of the complex process of rehabilitation. The inputs and outcomes can be quantified but the relationship between the two is opaque. What are the critical factors for successful rehabilitation? Are benefits due to specific therapeutic techniques or to better delivery and

organisation? How much can be attributed to the greater enthusiasm of the staff? Even apparently simple (yet important) questions await clear resolution. For example:

- The most effective transitional walking aid: a Zimmer frame or delta rollator (see box).
- Effectiveness of hip protectors.
- The health gain of home assessment visits.
- The most effective training programme for nurses in rehabilitation.
- Do multidisciplinary collaborative notes improve rehabilitation team working?

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#### Zimmer Frame or Delta Rollator to Promote Walking in Older People

The Zimmer frame has been used for over 70 years as a walking aid for older people. However, there are several inherent disadvantages because it promotes a slow, stop/start, non-physiological gait pattern. The delta rollator, a three-wheeled walking frame, encourages a smooth, physiological striding type of gait pattern. Which offers the better mobility outcome when used as a transitional walking aid for patients on elderly care wards with a temporary decline in mobility is not known.

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## DEFINING REHABILITATION

### Definition of Rehabilitation

Understandably, specialist registrars prefer compact definitions for common questions such as “What is rehabilitation?” If only it were that simple! Let’s first have a look at a definitional approach to understanding rehabilitation for older people.

#### Exercise 1

First consider any organ “ology” you are particularly familiar with (e.g. cardiology). Spend a few minutes considering how you might define it for a first year medical student. Now adopt a similar approach to define rehabilitation.

#### Exercise 1: response

How did you get on? You probably had no trouble with an organ “ology”. For example, cardiology is a clinical speciality of the diseases affecting heart

and circulation in terms of anatomy, physiology, pathology, epidemiology and therapeutics. Did it cross your mind, and would you have told the medical student, that most “ologies” have a rehabilitation component? (Cardiac rehabilitation, pulmonary rehabilitation, rheumatological rehabilitation, etc). Probably not, because we have not been trained to value these programmes (although there is accumulating evidence of effectiveness). Thrombolysis in myocardial infarction is drilled into us. Yet the successful National Heart Foundation Cardiac Rehabilitation Manual is still a mystery to many.

How did you manage with rehabilitation? More difficult to encapsulate succinctly? Why is this? The “ologies” reflect organ structures—they are therefore readily *bounded* systems. The concept of a kidney can be held in your mind as a tangible discrete entity. Not so with rehabilitation. It is *unbounded* and “fuzzy”. It relates more to the *whole system*, i.e. the person. It is therefore an antithesis to familiar and comfortable reductionist medical practice: “find the broken part and fix it” approach.

### Exercise 2

You are not alone in finding rehabilitation a difficult concept to define. There are probably as many definitions offered for rehabilitation as there are writers on the subject. A selection has been collected below. Read and familiarise yourself with them, underline key words and then attempt to analyse the similarities and differences between the various definitions.

*“Rehabilitation must be a continuous process, beginning with the onset of sickness or injury, and continuing throughout treatment until final re-settlement in the most suitable work and living conditions is achieved.”*

Piercy Report, 1956

*“Rehabilitation comprises reablement—the acquisition of skills needed for independent life, and re-settlement, the restoration of the person to his own or to another environment.”*

Gompertz and Ebrahim, 1992

*Rehabilitation is “about the tertiary response to insult or disease”*

Goodwill and Chamberlain, 1988

*“The restoration of the individual to his (or her) fullest physical, mental and social capability.”*

Scottish Health Service Council on Medical Rehabilitation, 1972

*The primary objective of rehabilitation involves restoration (to the maximum degree possible) of either a function (physical or mental) or a role (within the family, social network or workforce).*

Nocan and Baldwin, Audit Commission, 1998

*“Rehabilitation is a problem solving and educational process aimed at reducing the disability and handicap experienced by someone as a result of disease, always within the limitations imposed both by the available resources and by the underlying disease”*

Wade, 1992

### Exercise 2: response

You should now appreciate the variation in rehabilitation definitions. This variation stems partly from the diversity of rehabilitation applications: childhood to old age; numerous diseases and trauma; different settings (home, hospital, healthcare, social care). Considering rehabilitation just for older people does simplify our task. With this restriction, there is probably more agreement than disagreement between the definitions. The focus is that of the *whole person* expressed variously in terms of function, abilities, independence or role. Did you notice how often “restoration” was used? Restoration (“to bring back to a former state”) is rather optimistic for an overwhelming disease (e.g. severe stroke) or progressive disease (e.g. Parkinson’s disease). For older people, therefore, we might wish to distinguish between *active* and *maintenance* rehabilitation. The former implies an expectation of improvement and the latter prevention of deterioration. Moreover, we also need to address the general older age concept of *frailty*. Although difficult to quantify reliably at the bedside, frailty implies an age- and disease-related loss of physiological reserve such that minor stress events result in disproportionate functional consequences. Rehabilitation has particular relevance in these circumstances.

Beware the use of value-laden words such as “fullest” or “optimal”. They beg the question of from who’s perspective the rehabilitation results are being judged. There is a dangerously implicit assumption of a professionally based judgement for a process which should be patient/carer centred. This is not inconsequential nit picking. A patient with a fractured neck of femur may not share the notion of “a successful home discharge” when returning to the prospect of a commode in the living room. These ambiguities in rehabilitation perspective, commonly unvoiced, can smoulder and lie at the heart of disability adjustment difficulties.

Having examined these rehabilitation definitions, I hope you might now understand that rehabilitation for older people is better understood as a *health care concept* within which key attributes can be identified.

Key Rehabilitation Attributes	Comment
Wholeness	The whole person rather than a part
Highly individualised	Therefore not a standard response like, say, myocardial infarction management
Emphasis on functional abilities	Self-care, mobility and life spaces, leisure
Not time limited	Need to have a wider vision than just hospital care
Active, planned responses	Requires a creative problem-solving approach in which the patient works at the extremes of their physical and functional abilities

**THE IMPORTANCE OF REHABILITATION FOR OLDER PEOPLE**

Why should rehabilitation be at the heart of geriatric medicine? Two reasons. Firstly, because acute illness in older people commonly has functional consequences; especially mobility and self-care skills. Secondly, because many disease processes, often referred to as degenerative diseases, are strongly age-related. These diseases

are progressive, only partially ameliorated by our medical model (drugs and surgery), and can have a major impact on daily life activities of older people.

*Exercise 3*

Jot down the “Big Six” degenerative disease processes faced by older people. List alongside these their associated rehabilitation responses.

*Exercise 3: response*

	Prevalence	Rehabilitation Responses
Generalised Osteoarthritis	30% >75y	Exercise Programmes
Chronic Respiratory Disease	30% >65y	Pulmonary Rehabilitation Programmes
Ischaemic Heart Disease/Chronic Heart Failure	6–10% >65y	Cardiac Rehabilitation Programmes
Peripheral Vascular Disease	12–15% >75y	Progressive Exercise for Claudication
	Annual Incidence per 10,000	
Osteoporosis/ Fractured Neck of Femur	90 (women 75–84y)	Mobility Exercise Programmes
Stroke	140 (75–84y)	Stroke Rehabilitation Units

Here is my “Big Six” list. How does yours compare? You may, quite reasonably, have some alternatives because the question was deliberately a little ambiguous (sorry!). The exercise was designed to emphasise our medical concern for neat pathological classifications. An apparent advantage of considering the health problems of older people in terms of pathology is that the rehabilitation responses can be neatly juxtaposed. At least it looks comfortable on paper, but in real life it is more complex. Most older people have multiple pathology. What should be the rehabilitation response for an older person with a combination of OA knees, chronic bronchitis, chronic heart failure and peripheral vascular disease?

*Exercise 4*

Having examined the traditional medical approach to illness and older people, let's now consider a fresh perspective—that of the older person. List the main threats to health and personal independence which older people might report and alongside them note the key professional and/or service best placed to respond to each problem.

*Exercise 4: response*

Hopefully you have now substituted with a different list. My list is extracted from the National Disability Survey conducted by the Office of Population Censuses and Surveys (OPCS) in 1989. Note that the term *disability* has been introduced, of which more later.

	% Prevalence in >75-year-olds living at home	Professional or service response
Mobility	82%	Physiotherapy
Hearing	55%	Audiometry Department
Personal care	46%	Occupational Therapy
Vision	40%	Eye Department/ Optician
Dexterity	33%	Occupational Therapy
Continence	21%	Gynaecology/ Urology/ Continence Services
Communication	20%	Speech and Language Therapist

A key purpose of the OPCS study was to provide “a comprehensive estimate of the prevalence of disability by age, degree of severity, and type of disability”. This type of national information is critical for government planning of services and benefits. The estimate for the numbers of people with disabilities in the UK was 6 million adults of whom 4.3 million (70%) were over the age of 60 years—or 46% of all older people. Most (over 90%) of older disabled people live in their own homes, and most (over 80%) have only ‘mild’ disability but many have several types of disability.

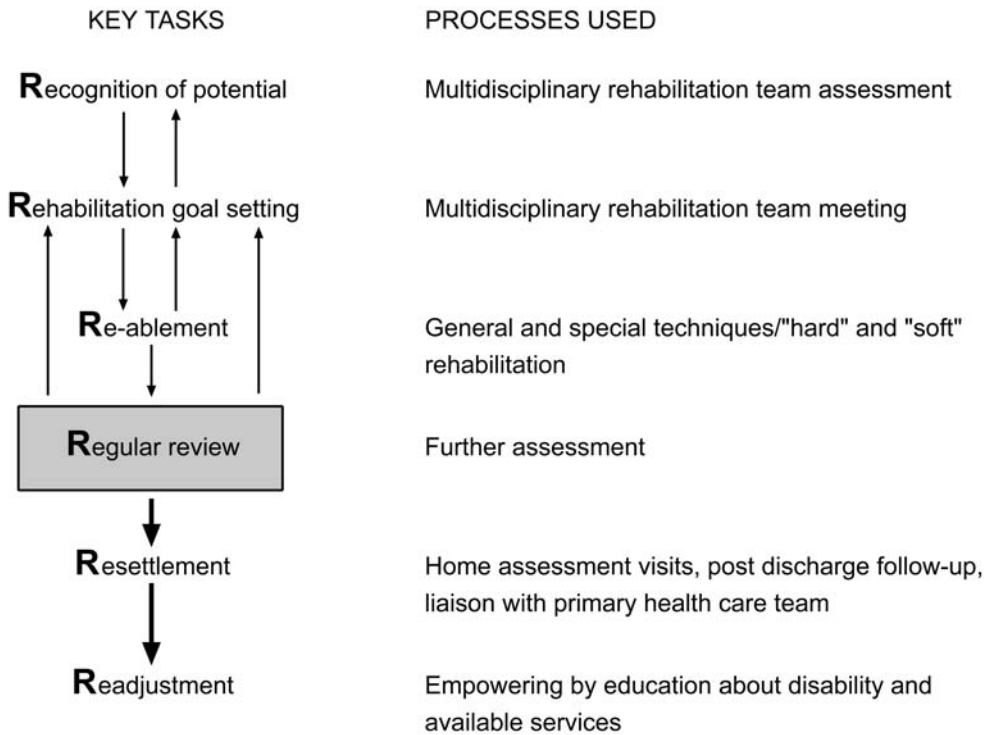
A key learning point which emerges when the problem list is constructed in this way is the range of professionals and services required to respond to disabled older people. This introduces the ideas of *team working* and *coordination of care* for older people with disabilities.

### THE WHO INTERNATIONAL CLASSIFICATION OF IMPAIRMENT, DISABILITY AND HANDICAP (ICIDH)

We now have two different ‘truths’: a pathological and a disability classification of rehabilitation need for older people. Each has something useful to offer. This is the basis for the four-level WHO classification which allows the consequences of illness to be considered in terms of pathology; impairment; disability and handicap (see Chapter 3). It facilitates a multidimensional view of disablement in older people (and others) and is a useful systematic model within which to consider the rehabilitation process. It prompts the need to uncover the cause (pathology or impairment) for a disability when a person presents with, for example, a mobility problem; whilst also prompting examination of the consequences of a disease in functional terms (disability) and in relation to the lifestyle of the individual patient (handicap). Thus a balanced approach is achieved between disease modification (usually drugs) and maximising independence (physical treatments, aids and adaptations). It reinforces the rehabilitationist’s obsession with environment modification, as much ‘disability’ is located outwith the person in environments constructed for able-bodied people.

### Limitations of the WHO Classification

1. To some, the ICIDH represents an over medicalised model in which disability is seen as located primarily within the individual. An alternative view is to consider disability less as an attribute of a person and more as a set of circumstances, many of which arise from the external environment. In this social model, the handicap resulting from a reduction in mobility is as much a reflection of building design, such as steps restricting access, as the biological fac-



**Figure 1.** The “five Rs” of the clinical process of rehabilitation.

tors. This argument forms part of a larger thesis concerning the social construction of old age.

2. It is easy to assume some form of proportional relationship between a pathology leading to impairment(s), disability and handicap. However, the relationship is often frustratingly discontinuous. This is easiest to understand for handicap as here the context is the individual and their particular circumstances. For example, an isolated homonymous hemianopia (impairment) has considerably greater lifestyle consequences for a car driver (loss of licence) than for a non-driver. However, the discordance between impairment and disability is not so widely appreciated and is currently unexplained and requires new research. Greater impairment burdens do not necessarily imply greater disability. Moreover, changes in impairment do not adequately explain the reduced disability that occurs during rehabilitation. This may simply reflect an important characteristic of rehabilitation techniques in that they largely improve function without influencing biology.

## REHABILITATION IN PRACTICE

The “five Rs” of rehabilitation, and their associated supporting processes, provide a practical clinical scheme (see Figure 1). Notice how primary assessment is the foundation but that it is an iterative process with regular reviews influencing the reablement process.

### Rehabilitation Assessment

Although much is written about assessment in rehabilitation, clinical practices are largely anecdotally described rather than research based. They can be perplexing clinical skills to acquire. The medical model using the standardised history and examination with which you are familiar should give you an idea of the pathology and impairments. But beware! Doctors are poor at identifying disability, and even worse with handicap. How can you do better? Three tips may help:

1. You need enough *time*

2. You need to *modify* your approach to the history
3. You need to encourage “*the telephone test*”: call up anybody who knows the patient well—formal or informal carers—for background information.

### *How to modify your approach*

Hold in your mind three simple themes to be explored:

- Who *was* my patient?
- Who *is* my patient?
- *How* did he get there?

The trick is to get the older person (often reluctant with an authority figure) to talk discursively. This is called the *narrative approach* and is the antithesis of the more familiar rapid closed questioning (e.g. did the pain go down your arm? Yes/No).

The *narrative approach* has several advantages in rehabilitation:

- a) The telling of the story generates a therapeutic relationship based on shared understanding.
- b) The patient’s interpretation becomes dominant and the trap of ‘normative’ responses is avoided (see the following section).
- c) A more elaborate, informed and useful analysis can be made.

(see Greenhalgh and Hurwitz (1999)<sup>4</sup>)

### *Rehabilitation Assessment: Get at the Facts*

**The Plot:** Mrs Smith who lives with her daughter is severely disabled by knee arthritis and is admitted after a fall.

**The Ambush:** Angry daughter: “Why are you **dragging** (her emphasis) my mother up and down the ward?”

**The Real Plot:** Although chairfast for several years, she is well adapted to her disability so that, with her daughter’s help, she has a content lifestyle and is self-fulfilled with her family around her.

**The Lesson:** Avoid a routine approach. The more individualised and patient centred the better. Try to find out the *real* rather than the *apparent* problems.

### *Exercise 5*

Professor Bernard Isaacs has suggested ten key questions to use in rehabilitation assessment that I have grouped under *information gathering* and *interpretation*. Have a look at the information gathering questions 1–4 and write down the form of words you might use in practice to obtain each section of information.

### *Key Assessment Questions Suggested by Isaacs*

#### *Information Gathering*

1. Who is the patient?
2. What functional changes has he undergone? Over what period?
3. What adaptation has he made to the functional changes?
4. In what way has his occupational, social and family role altered?
5. What diseases have caused the functional changes?

#### *Interpretation*

6. What is the likely course of these diseases, given optimum medical treatment?
7. What improvement in functional level is potentially achievable?
8. If these functional improvements are attained, how will this alter this patient’s potential social role?
9. How acceptable is this alteration of role to the patient?
10. What secondary effects will these functional changes in the patient have on his carers?

### *Exercise 5: response*

1. Tell me about yourself and your life.
2. What problems do you have looking after yourself at home now?
3. How do you cope with these problems?
4. What do your family say about these problems?

Notice how they are very open-ended questions—really nothing more than prompts.

## Standardised Measurements

Standardised measurement instruments are structured questionnaire tools which are used increasingly frequently in routine rehabilitation practice. The clinical assessment of disabled people is a difficult skill to acquire and specialist registrars can therefore be forgiven the apparent shortcut of using a battery of standardised measurement instruments. But be warned:

1. Assessment involves *evaluation* and *interpretation* of patient problems. The standardised measurement instruments quantify components but can only inform the assessment process more reliably. Better measurement complements, but does not replace, assessment. The measurement instruments cannot determine underlying causes for disability, nor can they determine the interventions that are required for individual patients.
2. “*My name is Legion for we are many*” (Mark Ch. 5: 9). There are multitudes of standardised assessment instruments available. Which ones should you use?
3. Standardised assessment instruments form the backbone of quantitative evaluation in clinical trials. Therefore there is a seductive notion that what works in research (good science) should be just as valuable in clinical practice. However, most rehabilitation trials have a research worker dedicated to obtaining the measurements. Completing a battery of instruments can be extremely time consuming.
4. Many older people, particularly those with cognitive impairment, depression, poor hearing or vision — just the people for whom comprehensive assessment is critical, find questionnaire completion, even with help, beyond them. The currently popular SF36 (a global health measure) has low response rates when used by older people.
5. Remember you are part of a team. What are the views of the other members of your team about a proposed new instrument?

These negative comments are not to detract from the genuine importance of standardised assessment measures in rehabilitation but over-reliance and an unquestioning use is an intellectually lazy attribute for a specialist registrar. It is generally more rewarding to talk to patients directly than through

questionnaires. The Royal College of Physicians and the British Geriatric Society (1993) have jointly recommended the following standardised assessment instruments for routine use when assessing older people:

Domain of Interest	Recommended Scale
ADL disability	Barthel Index
Vision and hearing	Lambeth Disability Screening Score
Mental impairment	Hodgkinson Abbreviated Mental Test
Depression	Geriatric Depression Score
Quality of life	Philadelphia Geriatric Centre Morale Scale
Social circumstances	Social indicators checklist

Which of these scales have you seen in use? Possibly only the Barthel Index and Abbreviated Mental Test. The others have not really caught on. The Philadelphia Morale Scale in particular has not become popular. Many older people find it frankly upsetting to complete. Moreover, quality of life is a nebulous concept and probably too subjective to be captured in a questionnaire. Wade has referred to it as “an illusion that cannot be defined or measured”.

### *Properties of measurement instruments*

Given the mountain of scales available, it might be thought that they are simple to create. Not so. A “good” scale takes about five to ten years to develop. What makes a “good” scale? There are various measurement properties that need to be demonstrated in research studies using different patient groups in different settings:

- Validity:* Does the instrument actually measure what it purports to?
- Reliability:* Does the instrument give similar scores when used on the same patient by two observers, or when repeated on stable patients?
- Sensitivity:* Does the instrument detect clinically important changes?
- Acceptability:* It should be simple and quick to apply, easy to understand (by the whole team), and easy for patients to complete (high response rate).

These instrument qualities are not independent and perfect scales do not exist. Compromises have to be achieved between, for example, sensitivity and reliability—a scale sensitive to small changes has low reliability (variation in score).

*Impairment measures*

Many of these will be covered in chapters dealing with specific diseases. Our purpose here is general principles.

*Exercise 6*

Consider the following common impairments and list alongside them the measurement instrument you might apply: poor vision, poor hearing, confusion, uncomfortable feet, poor mobility.

*Exercise 6: response*

If you are still alert and reading actively, you will have been perplexed by ‘poor mobility’, ‘confusion’ and ‘uncomfortable feet’. These are clinical problems rather than genuine impairments. The genuine impairments are, in fact, very complex. I have set down a more precise list of impairments with a simple clinical assessment to enable their detection, and a more definitive quantitative

measurement. Some of the practical difficulties in using the WHO IDH classification should now become more apparent to you.

‘Confusion’ contains several separate cognitive impairments, including orientation, memory and attention deficits. We might get a clue to the presence of these during our clinical assessment through a patient’s apparent vagueness to our questioning (assuming that the patient is not deaf and is able to hear our questions). With ‘uncomfortable feet’ we should really be considering range of motion of the ankle and sub-talar joints, and at the forefoot, and deformities and disturbances of foot stance and movement biomechanics. All we can easily do in the clinical setting is provide a description of our findings. Podiatrists would use standardised measures and special equipment to define more precisely the impairments present.

Gait impairments underlying ‘poor mobility’ could include balance, walking speed, cadence (steps per minute), stride length and gait cycle times (support, swing and double support). Such detailed gait impairment analysis requires the facilities of a gait laboratory and an experienced technician. However, gait speed is an excellent summary measure of gait impairment. It is a perfect example of a measure that is valid, reliable, sensitive,

Problem	Impairment	Clinical Assessment	Impairment Measurement
Vision	Visual acuity	Do you have difficulty: “...seeing newsprint even with glasses?” “...recognising people across the road even with glasses?”	Snellen chart
Deafness	Loss of appreciation of sound frequencies	Do you have difficulty: “...hearing a conversation?”	Audiometry
Confusion	Orientation, memory, attention etc.	Ability to provide clear history	Abbreviated Mental Test Score Mini-Mental State Examination
Uncomfortable feet	Multiple impairments	Clinical description	Foot Health Status Questionnaire Foot Morbidity Index
Poor mobility	Multiple impairments possible	Gait speed	Gait laboratory



acceptable and useful. The patient is simply timed using a stopwatch over a measured and marked 10-metre distance. The measure correlates with other gait parameters, including balance and clinical assessment of gait pattern. It should be used as part of routine practice.

### *Disability measurement*

#### Activities of daily living

There are many instruments available to quantify activities of daily living (ADL) but the Barthel Index has become popular and is in widespread routine use in the UK. It is an ordinal scale (as are most rehabilitation measures) and this means that an improvement in score of, say, five points to six, does not represent the same clinical improvement as a score of 10 moving to 11. The Barthel Index assesses levels of independence or dependence for ten ADL tasks with a score range of 0 (dependent) to 20 (independent):

Dressing	Bed/chair transfers
Feeding	Walking
Grooming	Stairs
Toilet	Bladder
Bathing	Bowels

The score is quick and easy to use. It can aid both systematic disability assessment and also show rehabilitation progress if repeated at intervals. The measurement properties are well researched. Validity has been well demonstrated and is a key strength. Reliability is less than might be expected: a change of four points is required to be certain that a real difference has been measured. The main disadvantage of the Barthel Index is that the steps on the scale are fairly large—it is therefore not very sensitive to change. Also, especially for disabled people living at home, there is a marked ‘ceiling’ effect in as much as patients can score a maximum of 20 points and be ‘independent’ but still have daily living restrictions. Nonetheless, the Barthel Index provides a valuable tool to assess disabled older people and its routine use has much to commend it.

#### Extended activities of daily living

Extended, or instrumental, ADL scales extend the range of the Barthel Index to include important

other daily tasks such as housework, shopping and trips. They are especially useful for patients at home for whom the ceiling effect with a Barthel Index is a great limitation. Examples are the Frenchay Activities Index and the Nottingham ADL Score.

### *Handicap measurement*

Handicap, the disadvantage to the individual as a result of ill health, is the critical level to effect change from the patient’s point of view. It involves placing the individual in the context of their home, local environment and facilities, their relationships, motivation, mood and expectations. Unsurprisingly, the uniqueness of this context makes the development of a generic scale difficult. Some aspects of handicap are covered by the extended ADL measures (e.g. social activities). The London Handicap Scale is a recently introduced instrument but remains a research tool for assessing the outcome of services rather than describing handicap to assist rehabilitation assessment.

The best insight into handicap comes from the clinical assessment process. There is no substitute for knowing the patient as an individual, supplemented by observing how they cope in their own home (home assessment visits). Helpful tips to identify handicap are to ask broad questions such as:

1. What would make the biggest difference to your life?
2. What do you see as your number one problem?
3. Asking patients/care givers to describe a typical 24-hour day.

Thus, we have come full circle, back to the critical importance of a skilfully obtained clinical assessment process. This is the skill you need to acquire.

### **Team Working**

A key aspect of successful rehabilitation is that your medical assessment is only one segment. Others will make equally important contributions but from different perspectives. This is the concept of team working which was an essential component of Warren’s early work. Surprisingly, the General Medical Council has only recently produced

explicit guidance on effective medical teams ([www.gmc.org.uk](http://www.gmc.org.uk)). However, rehabilitation has a special dimension in the *multi-professional* nature of the team. Given its importance, it is remarkable how little rehabilitation research has addressed this issue (considerable opportunities for a curious specialist registrar). The best available knowledge base has to be plagiarised from management literature. The management popularist Charles Handley has written extensively on teams (and also leadership styles). He regards teams as providing better ideas, solutions which are better evaluated and, interestingly, notes that teams are prepared to take more risky decisions than individuals.

#### *Characteristics of Effective Teams (after Handley)*

- Motivated by shared aims and philosophy
- Prepared to coordinate their work
- Recognise their complementary skills
- Ability to resolve conflict
- Mutual respect
- Flexible and open to ideas

#### *“The Team as the Hero”*

Robert Reich, writing in the *Harvard Business Review*, challenges the myth of the entrepreneurial hero (akin to the aloof and authoritarian doctor) who personifies freedom and independence, who creates the Big Idea, builds Big Machines and Big Organisations. He argues it was, and is, rarely so. Rather, there is a collective entrepreneurial culture in which individual skills are integrated into a group and the collective capacity becomes something greater than the sum of its parts. “The team as the hero” is characterised by close working relationships so that as problems are worked through, team members learn about each other’s abilities and how they can help one another to perform better. Coordination and communication replace older practices of command and control.

#### *Team members and leadership*

Who should be in the multidisciplinary rehabilitation team? “Obviously,” you would say, “a doctor.” And you might imply the doctor as the natural team leader. However, although the doctor could (if he/she has the appropriate skills) become the team chairman (a role of coordination), leadership of an effective team should rotate

according to patient need. The care of the older patient admitted with pneumonia will initially be led by a doctor; the nursing staff will have a lead role in preventing pressure sores and maintaining nutrition, continence and morale; and the therapy staff will lead in the rebuilding of independence. A doctor as a (poor) leader might say “Please arrange a home visit”. Better to act as a chairman, synthesising information within the team, and allow sufficient professional space to create a team decision about the need for a home visit. Beware the situation where:

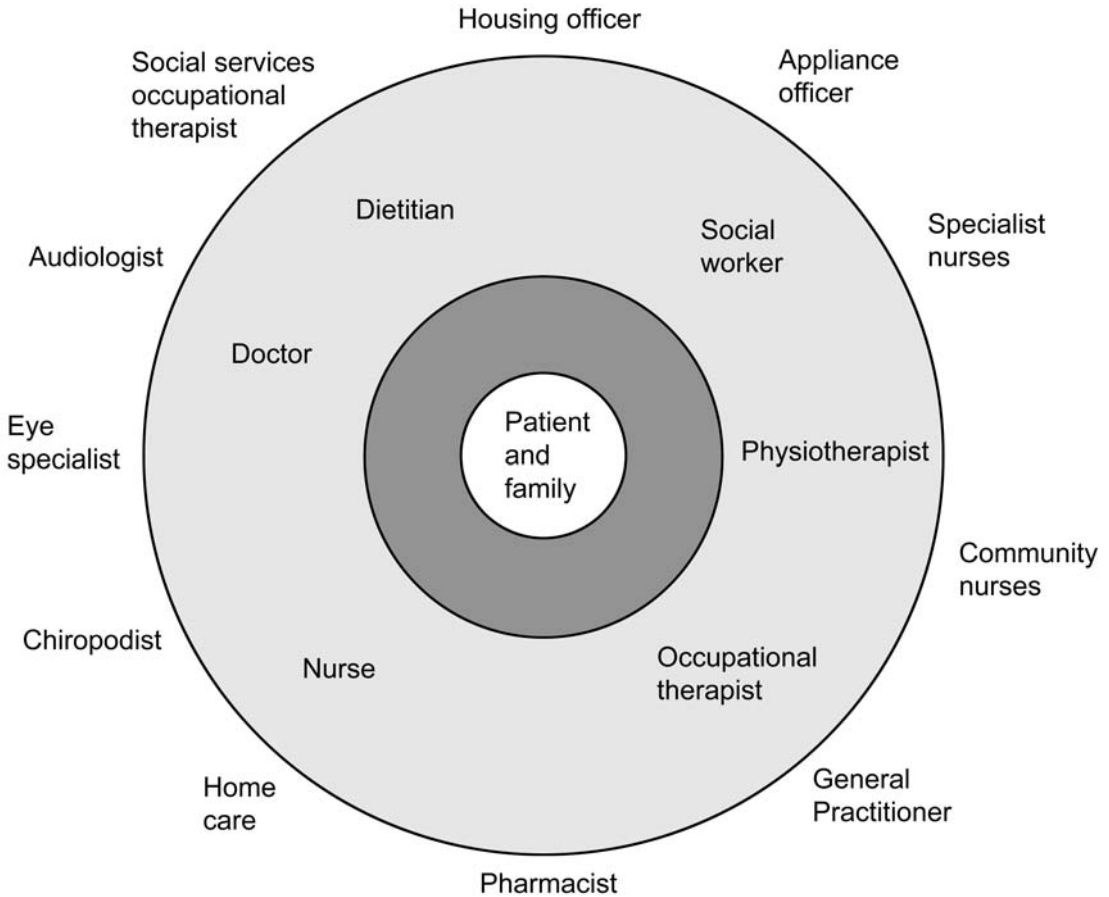
- the therapist proposes,
- the doctor orders,
- and the nurse executes.

So far we have mentioned doctors, therapists and nurses. Who else should be in the team? The answer is “it depends”—it depends on the patient’s problems. For example, a patient with severe OA hip will require a different team (perhaps orthopaedic staff) to a patient with a below knee amputation (prosthetists). However, we can usefully consider a *core* rehabilitation team and an *extended* rehabilitation team shown diagrammatically in Figure 2. Imagine the circles as revolving rims to accommodate the idea of rotating leadership. Pluralistic leadership is a high-level team function and is not always easy to achieve in practice, particularly if some team members have relatively less clinical experience. Patience is needed.

#### *Team functioning*

Teams need to meet regularly to generate cohesion and function effectively. There are two purposes to team meetings:

- a) Patient management
  - share assessments
  - plan and agree rehabilitation goals and interventions
  - evaluate progress
  - plan discharges
- b) Team building
  - getting to know each other
  - local gossip and events
  - proposed practice changes
  - concerns, grumbles and special pressures
  - feedback



**Figure 2.** The core (inner circle) and extended (outer circle) rehabilitation team members.

Traditionally, multidisciplinary rehabilitation teams meet primarily to discuss patient management but increasingly, more specialist teams (e.g. Stroke Units) will meet from time to time with the specific purpose of team building.

#### *Tips for successful team meetings*

- a) Time management:
 

There is much to do in these meetings, so allocate sufficient time and arrive promptly. Some doctors have them before ward rounds, others afterwards. Try both to see what works for you and your team. Use the time available intelligently: most time for the most complex patients.
- b) Summarise:
 

Team assessments and information gathering need to be made manageable by an effective
- c) General points:
  - summary. This should be the role of the meeting chairman, usually (but not invariably) a doctor. There are different approaches to summarising:
    - Set out a short biography which describes the patient in their individual context (i.e. avoid “an 83-year-old man with a fall”)
    - Construct a problem list or, better, list the impairments, disabilities and handicaps
    - Create a formulation in terms of strengths and weaknesses
  - Don’t assume you as a doctor know what needs to be done
  - Listen more than talk
  - Get everybody to contribute
  - Somebody should keep notes
  - Involve community staff when necessary

- (they will also know the patient well)
- Involve patient and family by:
- (i) discussion of interim conclusions
  - (ii) considering inviting them into the meeting
  - (iii) meeting with them separately and in private (wards are public places).

## Rehabilitation in Action

### *“Rest is rust”*

Newly appointed (but *not* experienced!) specialist registrars might possibly be forgiven the idea that rehabilitation is something “done by therapists to patients”. This statement is doubly wrong. Firstly, as we have seen, effective rehabilitation is about team working, and you are part of that team with an important role to play. Secondly, rehabilitation is not passively *done* to somebody. The somebody has to be encouraged, cajoled and motivated to struggle against their disability under skillful guidance from the rehabilitation team. It is much easier to sit comfortably and passively in a chair if you have painful knees or if you are recovering from a fractured neck of femur. Even more comfortable is to stop in bed. Unfortunately, even athletes become deconditioned after a few days’ rest. An older person with limited physiological reserves may very rapidly lose sufficient cardiovascular and muscle function such that the slightest exercise, say standing up from a chair unaided, becomes beyond their physiological capacity.

### *The Dangers of Going to Bed*

Richard Asher was an inspiring medical writer and, in an article with the above title, popularised the importance of early mobilisation. “Too often a sister puts all her patients back to bed as a housewife puts all her plates back in the plate rack—to make a generally tidy appearance.” He modified a stanza from a well-known hymn into:

*“Teach us to live that we may dread  
Unnecessary time spent in bed.  
Get people up and we may save  
Our patients from an early grave.”*  
Asher, *Brit. Med. J.* 1947

### *The Dangers of Sitting in a Chair*

Lying in bed is “rehabilitation for the grave”. Yet, simply decanting a patient and immobilising them in a chair does not represent huge progress. How long do your patients spend sitting in chairs? There are hazards:

- Psychological (boredom!)
- Tissue viability
- Dependent oedema
- Deconditioning
- Insomnia
- Enforced dependency
- Deep venous thrombosis
- Constipation/urinary retention
- Contractures

We should replace Asher’s dread of beds to that of chairs:

*Teach us that we may be scared  
Of unnecessary time spent in chairs.  
Get people up and we may save  
Our patients from an early grave.*

### *Exercise 7*

Consider an older lady who has knee and back arthritis with associated weak muscles who is now 24 hours post-internal fixation for a fractured neck of femur. What steps should be taken over the next ten days or so to promote independence and mobility?

### *Exercise 7: response*

Many specialist registrars respond to this question by producing a shopping list of items such as “refer to physio.” or “get the patient out of bed”. However, rehabilitation is a *total* approach. So let’s start with a bigger vision.

### *Rehabilitation culture*

In this situation it is the *whole ward* which provides the platform for the rehabilitation process. The ward culture, staff skills and attitudes and the physical environment generate an atmosphere which either promotes or impedes rehabilitation. By culture we mean the pervading values, beliefs and the usual way of doing things. Ideally, the culture needs to be actively led and promoted by senior staff. Some people are better able than others to create a positive

rehabilitation culture. Consider your current wards. Which provides best rehabilitation? And why? Tactfully ask your consultant trainer about the rehabilitation culture on his/her ward.

The concept of a ward rehabilitation culture leads to the controversial issue about whether to combine acute and rehabilitation care on the same ward or, alternatively, have separate rehabilitation facilities. This issue is controversial because it is an area where there is scanty research evidence and therefore people are able to express (strongly) opinion-based views. On the face of it, it could be argued that there will inevitably be a clash of cultures with resulting uncertainty of purpose. “The urgent (=acute care) drives out the important (=rehabilitation).” If you are interested in one answer, refer to *Brit. Med. J.*, 1998; **316**: 1108.<sup>5</sup> Staff rehabilitation knowledge and skills (including your own) are acquired by training. Rehabilitation training for nurses is particularly poorly developed and this can be a critical detrimental factor to the whole environment approach to rehabilitation (see below).

### *Nurses and Rehabilitation*

Nurses have considerable potential to progress (or impede) rehabilitation. They have 24-hour close contact with patients and are usually the first to be approached for information by families. However, descriptive research literature suggests considerable ambiguity concerning their rehabilitation role. There is a conflict between a doing/caring role and that of promoting/facilitating. Consider this statement obtained from a nurse during a Bradford rehabilitation project:

“(Nurses) should stimulate patients but it is hard; it is not how we are trained. It is easier to do something in 30 seconds for a patient rather than standing back and watch them struggle for five minutes with eating, dressing, walking or transferring.”

Training programmes should be routine on rehabilitation wards.<sup>6,7</sup> They are powerful tools to influence change:

“This last 12 months the team has really come together. We have a better understanding of each other’s roles, the right staff are in the right place and they understand rehab.”

### *Rehabilitation and prevention*

*“Rehabilitation starts at day one”*

Don’t start rehabilitation for this patient *post-operatively* (or in other patients after an acute illness has resolved). She should be prepared physiologically and psychologically *pre-operatively* for her recovery period. Adequate hydration, nutrition and pain control will be the minimum physical requirements to foster a prompt post-operative recovery. However, unless she is unlucky and has had a previous fractured neck of femur, this will be this patient’s first experience of the condition. She needs to be prepared psychologically by a simple explanation of the anticipated care pathway before her operation.

### *Promotion of independence*

Again it is easy to shortcut to a narrow perspective of “get the patient out of bed”—an orthopaedic surgeon’s commandment, not, hopefully, that of a specialist registrar in Elderly Care Medicine. There is much to consider: How does she feel? Is there an appropriate chair? Can she reach for a drink? What walking aid is to be used? Are spectacles, hearing aid, dentures and footwear in place? One general conceptual approach which can be helpful here is to consider the rehabilitation inputs required in terms of “hard” and “soft” rehabilitation (Figure 3). “Hard” rehabilitation is the tangible component, the readily visible aspect of rehabilitation: the aspects that are quantified in rehabilitation process and health economic studies. “Soft” rehabilitation is more easily overlooked and is difficult to quantify yet research has shown it to be greatly valued by the patient. It involves talking to, listening to, understanding, and counselling.

### *Rehabilitation goals*

*“Unplanned rehabilitation is like an unplanned holiday. You don’t know where you are going until you get there, and when you get there, you don’t know if that is where you want to be”*

Bernard Isaacs

Rehabilitation goals are highly focused statements of intent that should be generated from the assessment process. Goal planning or goal setting is the process of agreeing the goals. Wade, reviewing the goal setting literature, concluded that using rehabilitation goals does lead to improved outcomes but with the

proviso that significant patient involvement occurs, and that both short- and long-term goals are developed. It is clearly axiomatic that the goal planning is supported by specific interventions. This encouraging research, however, is based almost exclusively on studies of stable disability, generally in the context of outpatient work. Further work is needed to examine the process and outcome of goal setting for disabled older people.

How would you recognise a rehabilitation goal? A useful acronym is SMART:

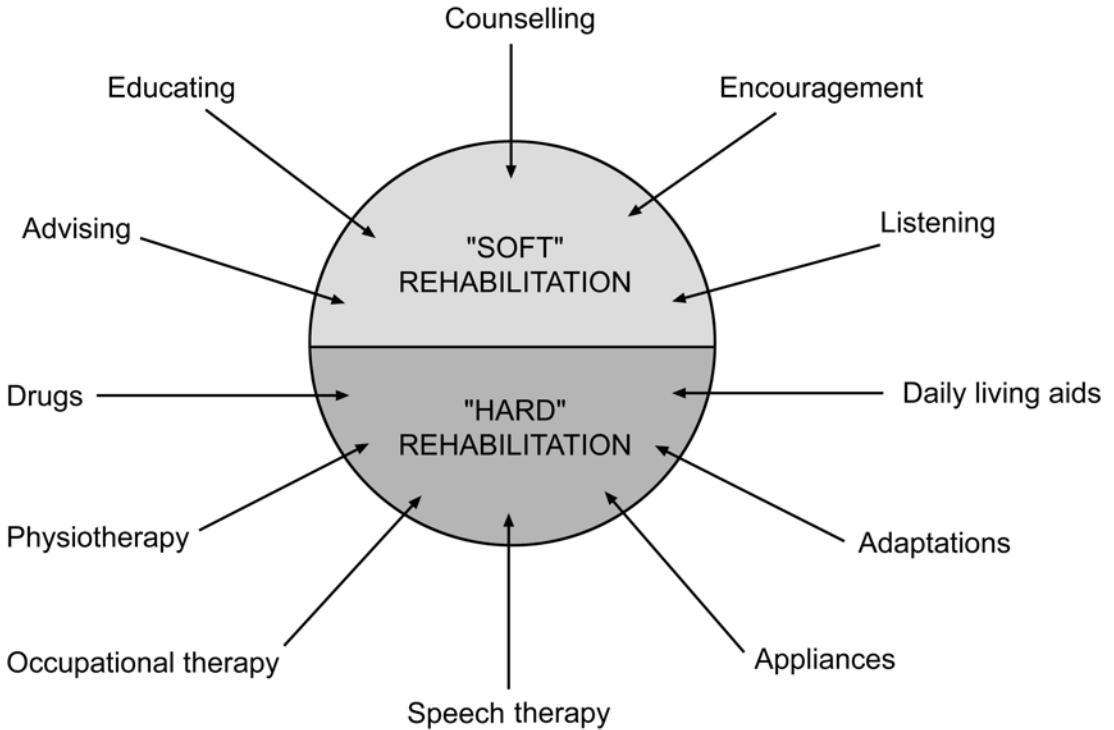
- Specific:** Who, will do what, under what circumstances, with what degree of success?
- Measurable:** Pass or fail.
- Achievable:** Not too easy, but hard enough to be taxing.
- Realistic:** Could the patient do it if his/her life depended on it?
- Timed:** When should the goal be achieved?

*Examples of Rehabilitation Goals*

Who?	Mrs Jones	Mr Brown
Will do what?	Walk to the toilet and back	Dress his top half
Under what conditions?	Using a Zimmer frame but no physical help	With clothes passed to him in order
With what degree of success?	At least four times each day	Each morning

**SUMMARY**

You should now appreciate that rehabilitation lies at the heart of geriatric medicine. It is a set of complex



**Figure 3.** Common rehabilitation interventions.

processes usually involving several professional disciplines and aimed at reducing the disability and handicap of older people facing daily living difficulties. There are three key processes:

1. A sound assessment and analysis of problems
2. Interventions to remedy or modify impairments, disabilities and handicap
3. An evaluation of progress and subsequent changes to the interventions.

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## SELF-ASSESSMENT QUESTIONS

A frail elderly man with limited mobility due to arthritis and chronic bronchitis is admitted with pneumonia. True or false?

1. He should be encouraged to talk about his life at home.
2. He should be referred to a physiotherapist and occupational therapist when the acute illness has settled.
3. The doctor should set the rehabilitation goals.
4. The main emphasis for rehydration should be on intra-venous fluids.

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# 13. Practical management of stroke

Peter Langhorne and Scott Ramsay

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Stroke is one of the major public health problems in the UK where it represents the third commonest cause of death and commonest cause of acquired adult disability.<sup>1</sup> An understanding of stroke management is an essential part of training in geriatric medicine because:

- It is largely a disease of elderly people
- Geriatricians often take the lead role in stroke service delivery in the UK
- The combination of acute medical care with more prolonged rehabilitation and social reintegration makes it a good model of ‘classical’ geriatric medical practice.

In this chapter we have approached the subject from a clinical perspective in a way which we hope will serve both as a practical guide to the management of the individual patient and an illustration of key aspects of the aetiology, epidemiology, diagnosis and management of stroke.

When faced with a patient presenting with a suspected stroke there are seven key questions you must address:

1. Is this a stroke? (Diagnosis)
2. What kind of stroke? (Classification)
3. What was the cause of the stroke? (Aetiology)
4. What problems has it caused? (Assessment)
5. What care is needed? (Management)
6. What can be done to prevent a further vascular event? (Prevention)
7. What advice should be given? (Advice)

## IS THIS A STROKE? (DIAGNOSIS)

### Characteristics

Stroke is a clinical diagnosis characterised by an acute, focal neurological deficit of vascular origin (Box 1). This definition is not quite all-encompassing since (a) stroke can occasionally cause a global loss of consciousness and (b) a rarer cause of stroke (subarachnoid haemorrhage) can present only with neck pain rather than focal neurological symptoms.<sup>1</sup>

Transient ischaemic attacks have the same clinical definition except that the symptoms resolve within 24 hours (and in most cases within one hour).

#### Box 1. Diagnosis of stroke

A clinical syndrome characterised by rapid onset focal neurological symptoms (and/or signs) lasting more than 24 hours\* or leading to death, with no apparent cause other than vascular.

\*Transient ischaemic attacks (TIAs) always resolve within 24 hrs.

### Presentation

The typical presentation of stroke is one of sudden onset, focal symptoms and signs which are ‘negative’ in character (e.g. loss of power or sensation) and tend to be maximal at onset (Box 2). Common examples of this include unilateral motor loss (hemiparesis), unilateral sensory loss (hemisensory loss), slurred speech (dysarthria), disorders of language (dysphasia), visual field defect (homonymous hemianopia), and unsteadiness (ataxia).



### Box 2. Differential diagnosis in suspected stroke

Vascular cause	Non-vascular cause
Sudden onset	Gradual onset
Focal features	Global features (e.g. confusion only)
Negative features (e.g. loss of power)	Positive features (e.g. abnormal movement)
Maximal at onset	Progressing
Previous vascular disease	No vascular disease evident

### Differential Diagnosis

The clinical diagnosis of stroke is usually reliable where there is a clear history of rapid onset of focal neurological deficit. However, difficulties can arise where there is an inadequate history due to reduced consciousness or communication problems (or an inadequate history has been taken!). The differential diagnosis includes:

- Subdural haematoma
- Cerebral tumour or abscess
- Hypoglycaemia
- Post seizure (Todd's) paresis
- Multiple sclerosis

Although the clinical diagnosis will be correct in the majority of cases (95%) further investigation is often required.<sup>1</sup> Box 3 outlines some features which should alert the wary clinician.

### Box 3. Pitfalls—Beware the patient with:

- Gradual onset of symptoms (or no clear time of onset)
- Features of raised intracranial pressure (headache, drowsiness, papilloedema)
- Global symptoms (confusion)
- Low risk of vascular disease

### Popular Misdiagnoses

Acute confusional state—remember to check for visuo-spatial dysfunction (such as sensory inattention, constructional apraxia, neglect) and

dysphasia. These are often labelled as confusion when in fact they represent focal neurological signs.

Failure to cope—remember to check for organisational problems (apraxia), gait apraxia or truncal ataxia. These may be labelled as “confusion” or “off feet” but again represent focal neurological problem.

### WHAT KIND OF STROKE?

#### Why Classify?

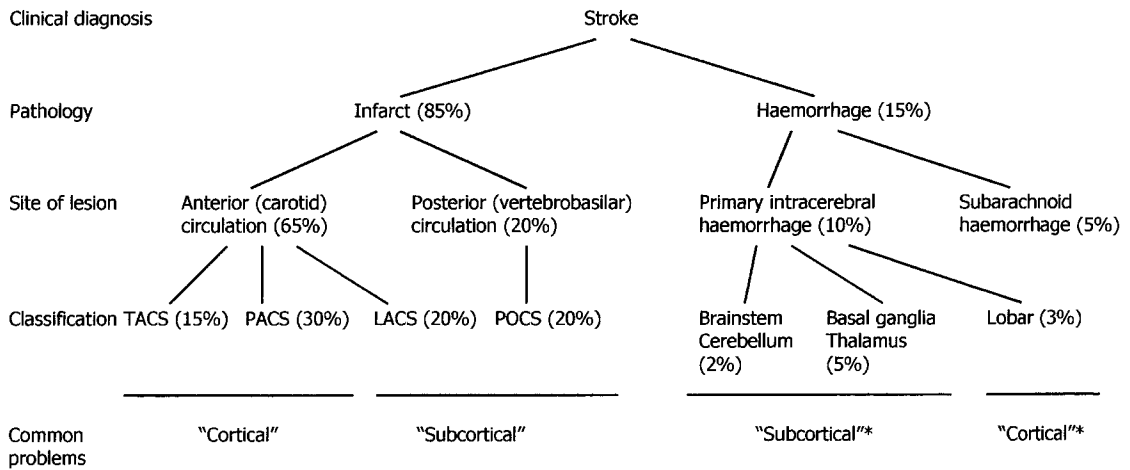
The days of diagnostic and therapeutic nihilism in stroke management should be over. We need to make a proper diagnostic assessment (including classification) in order to:

- Make an accurate diagnosis
- Identify the underlying cause
- Anticipate patients' problems
- Make an accurate prognosis (for survival, recovery and stroke recurrence)

Stroke classification has often followed an aetiological model (e.g. embolic stroke, thrombotic stroke) which is of limited practical value and often based on a number of dodgy assumptions. We will focus on a more practical clinical classification (Figure 1).

### Infarction or Haemorrhage?

Distinguishing cerebral infarction from cerebral haemorrhage is a fundamental step in the management of a stroke patient. Without knowing the underlying pathology it is impossible to make an informed plan of treatment. Unfortunately, attempts clinically to distinguish cerebral infarction from primary intracranial haemorrhage, either informally or formally using scoring systems, are not sufficiently reliable to guide individual patient management.<sup>2</sup> Therefore, CT scanning is essential and must be carried out within 14 days of the stroke since the high attenuation X-ray signal of blood may be lost thereafter (Box 4). Magnetic resonance imaging (MRI) can detect haemosiderin deposition and may occasionally be useful in excluding haemorrhage several weeks after the event.



Key: TACS - total anterior circulation syndrome, PACS - partial anterior circulation syndrome, LACS - lacunar syndrome, POCS - posterior circulation syndrome.

\* Cortical vs. subcortical definition of problems is less precise for haemorrhage

Figure 1. Stroke classification.

**Box 4. CT Scanning**

- Full management of stroke is impossible without CT scanning to distinguish infarct from haemorrhage
- CT scanning should be carried out within 14 days of the stroke

Subarachnoid haemorrhage can often be distinguished clinically because of its characteristic presentation of sudden headache plus the associated features of meningism, vomiting and reduced consciousness. CT scanning and lumbar puncture are required to confirm the diagnosis and guide neurosurgical referral. Angiography is subsequently required to plan neurosurgical intervention such as clipping or coiling of aneurysms. We will not dwell further on subarachnoid haemorrhage as this is a relatively minor player in geriatric medical practice and your main practical management steps are to make the diagnosis and refer to the appropriate neurosurgical service.

Cerebral vein thrombosis is an occasional rare cause of focal neurological signs which more commonly presents with headache, seizures, papilloedema and declining conscious level.<sup>1</sup>

Cerebral vein thrombosis forms part of the differential diagnosis of benign intracranial hypertension and encephalitis. The diagnosis can be confirmed by magnetic resonance angiography. We will not dwell further on cerebral vein thrombosis as it is also rare in geriatric medical practice.

**Stroke Syndromes**

*Cerebral infarction*

Having established the stroke is due to cerebral infarction a clinical classification can be used (Figure 1, Table 1). Cerebral infarction can be subdivided into four syndromes (Table 1). Two of these syndromes (total anterior circulation syndrome (TACS) and partial anterior circulation syndrome (PACS)) are caused by occlusion of the carotid artery, middle cerebral artery or anterior cerebral artery (Figure 2). They usually result in ‘cortical’ problems (higher cerebral dysfunction with variable degrees of motor and sensory loss). Lacunar syndromes (LACS) also occur in the carotid artery territory, but are due to occlusion of the deep perforating arteries in the subcortical areas of the brain (Figure 3). Posterior circulation syndromes

**Table 1.** Clinical stroke syndromes.

Syndrome	Site of Lesion	Features
Total Anterior Circulation Syndrome (TACS)	Middle cerebral artery or internal carotid artery	<b>All 3 of ...</b> Hemiparesis and/or hemisensory deficit Homonymous hemianopia Higher cerebral dysfunction (e.g. dysphasia, visuo-spatial dysfunction)
Partial Anterior Circulation Syndrome (PACS)	The middle cerebral artery or the branch of anterior cerebral artery (ACA)	<b>Any 2 of ...</b> Hemiparesis and/or hemisensory deficit Homonymous hemianopia Higher cerebral dysfunction <b>or ...</b> Limited hemiparesis/hemisensory deficit (e.g. face and hand, monoparesis) <b>or ...</b> Higher cerebral function alone
Lacunar Syndrome (LACS)	Deep perforating arteries	Motor and/or sensory loss affecting any 3 of ... Face, arm, hand, leg <b>or ...</b> Ataxic hemiparesis
Posterior Circulation Syndrome (POCS)	Vertebral or basilar arteries	<b>Any of ...</b> Cranial nerve palsy, bilateral motor/sensory loss Disorder of conjugate eye movement, cerebellar syndrome, isolated hemianopia

(POCS) affect the vertebrobasilar territory and have the attraction of combining all the weird eponymous brainstem syndromes in one classification! Posterior circulation and lacunar syndromes typically result in ‘subcortical’ problems (motor loss, sensory loss, ataxia). The value of this classification may not yet be apparent, but bear with us—it can help improve the understanding of the underlying stroke problem. It can even be fun to use your clinical classification to try to predict the CT scan result!

### *Cerebral haemorrhage*

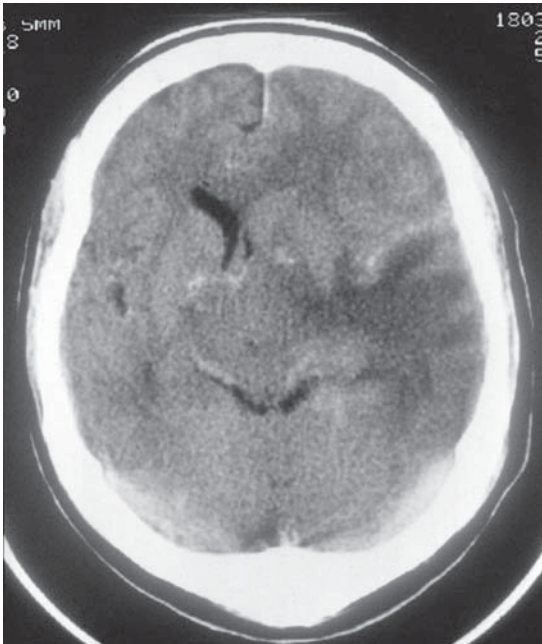
Cerebral haemorrhage is typically divided into primary intracerebral haemorrhage (in which the original haemorrhage occurs within the substance of the brain) and subarachnoid haemorrhage (in which the haemorrhage occurs primarily into the subarachnoid space). Primary intracerebral haemorrhage (PICH) can be subdivided on CT scan features into lobar (affecting the white matter of the parietal, temporal, frontal and occipital lobes; Figure 4), basal ganglia/thalamus (Figure 5) and

cerebellum/brainstem (Figure 6). For simplicity, we have grouped these into two groups, lobar versus the rest, to reflect a (simplistic) view of the underlying cause and symptomatology of the haemorrhage.

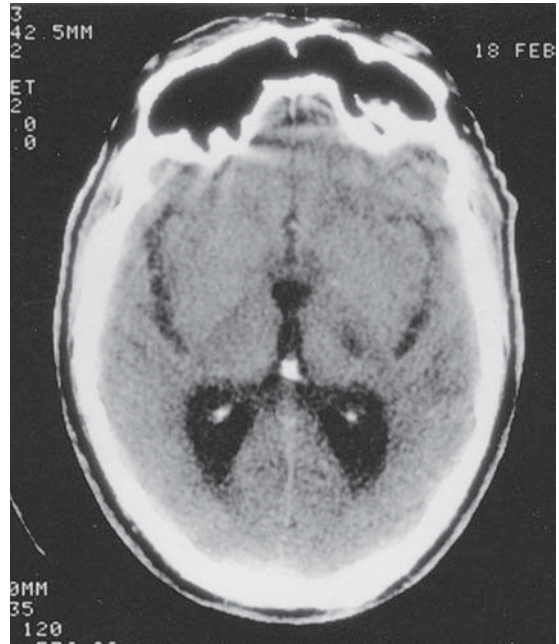
A further type of haemorrhage (haemorrhagic transformation of an infarct; Figure 7) occurs when bleeding develops within an area of infarction. This is a recognised complication of cerebral infarction and some acute drug therapies.

Please note the clinical classification is based on the patient’s symptoms and signs whereas the classification of intracerebral haemorrhage is based on CT scan results. The alert reader will therefore be wondering how to classify a stroke before the CT scan result is available. We suggest you still use the clinical stroke syndrome classification since as a general (and anecdotal) observation:

- Lobar haemorrhage often has clinical features of TACS or PACS
- Basal ganglia/thalamus haemorrhage has features of LACS
- Cerebellar/brainstem haemorrhage has features of POCS.



**Figure 2.** Cerebral infarction. Left middle cerebral artery infarct with low attenuation and mass effect compressing the ventricles. Patient presented with a left total anterior circulation syndrome.



**Figure 3.** Cerebral infarction. Left lacunar infarct causing a lacunar syndrome.

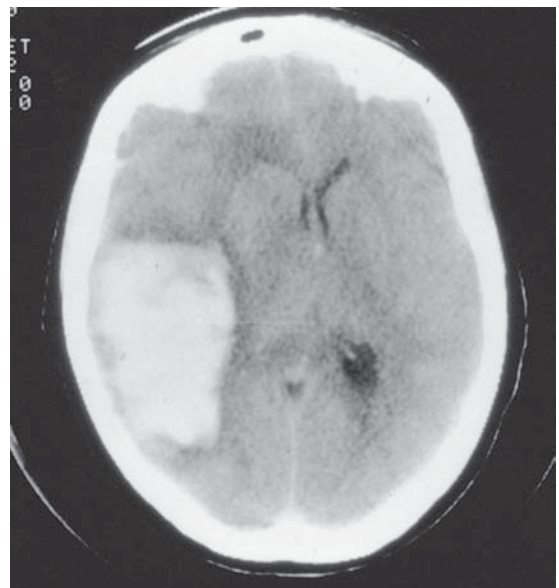
**WHAT IS THE CAUSE OF THIS STROKE?**

This process involves both the attempts to identify the cause of the stroke and also to clarify the risk factors that put the individual at risk of further stroke and vascular disease.

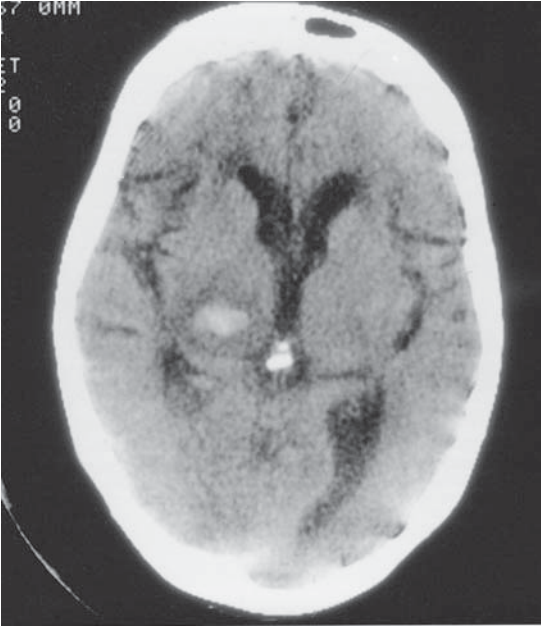
**Box 5. Major risk factors for stroke**

<b>Cerebral infarction</b>	<b>PICH</b>
• Hypertension	• Hypertension
• Cigarette smoking	• Coagulation disorder
• High cholesterol	• AVM or aneurysm
• Atrial fibrillation	• Cigarette smoking
• Carotid artery stenosis	
• Cardiac (recent MI, rheumatic heart disease)	
• Haematological (e.g. polycythaemia, clotting disorder)	
• Rarities (e.g. neurosyphilis)	

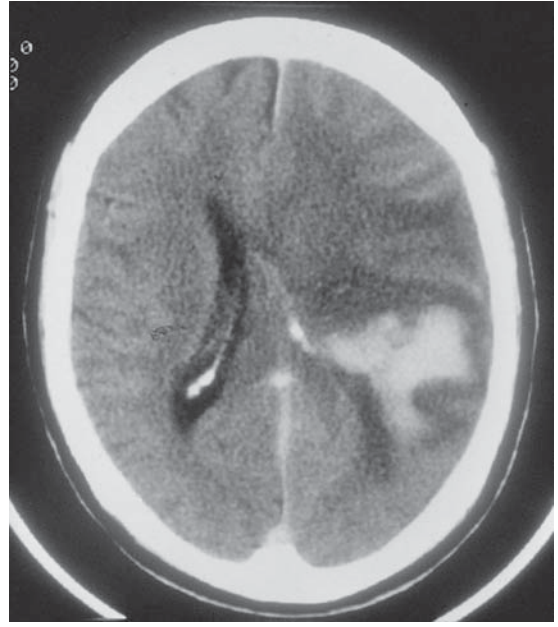
Key: PICH — Primary intracerebral haemorrhage, AVM — arteriovenous malformation



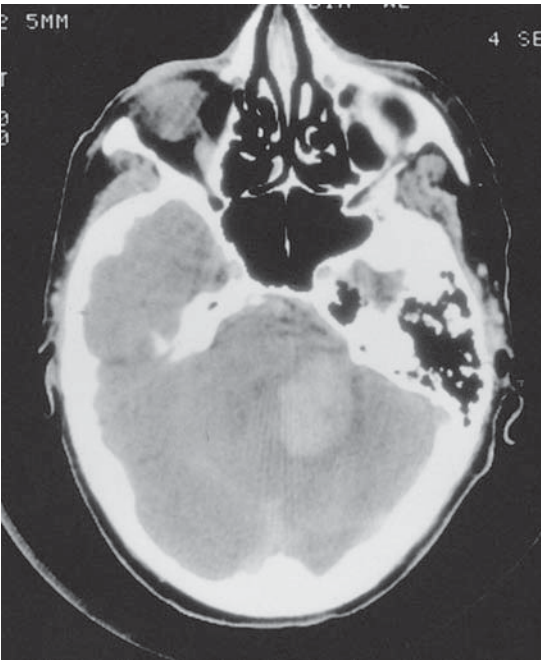
**Figure 4.** Lobar primary intracerebral haemorrhage. Right parietal lobar intracerebral haemorrhage (in this case caused by an arteriovenous malformation). Patient presented with reduced consciousness and a right total anterior circulation syndrome.



**Figure 5.** Right basal ganglia primary intracerebral haemorrhage. Small right-sided haematoma causing a right lacunar syndrome.



**Figure 7.** Haemorrhagic transformation of an infarct. Large left middle cerebral artery infarct (low attenuation area) with secondary bleeding into the infarct (high attenuation area).



**Figure 6.** Cerebellar primary intracerebral haemorrhage. Haemorrhage in the left cerebellar hemisphere. Patient presented with a posterior circulation syndrome.

### Risk Factors

In practical management we wish to identify risk factors which are treatable. Untreatable risk factors (e.g. age, sex, race and sometimes family history) are of epidemiological interest, but of little practical value. The main treatable risk factors for both cerebral infarction and cerebral haemorrhage are outlined in Box 5.

It is from recognition of these risk factors that the common diagnostic process in stroke management is developed (Table 2).

### *Cerebral infarction*

‘Cortical strokes’ (TACS and PACS) tend to be caused by embolism (less commonly thrombosis) affecting the carotid artery territory. Up to a quarter of these patients will have occluded their carotid artery and a smaller proportion will have a severe carotid artery stenosis which is presumably a source of embolism. Embolism due to atrial fibrillation is also common in this group.

**Table 2.** Investigation of acute stroke.

Investigation	Indication
<b>Routine tests</b>	
Full blood count ESR Blood glucose Urea and electrolytes Blood cholesterol Chest X-ray ECG Cranial CT scan	Routine tests to identify haematological disorders, cranial arteritis, diabetes mellitus, dehydration, hyperlipidaemia, cardiac disease, and arrhythmia.  Exclude cerebral haemorrhage. Doubt about diagnosis. Exclude obstructive hydrocephalus with cerebellar stroke.
Coagulation screen	Cerebral haemorrhage.
<b>Selected tests</b>	
Carotid duplex scan	Recent (<6 months) carotid artery TIA or ischaemic stroke (hemiparesis, aphasia, monocular visual loss). Patient fit for angiography and carotid surgery. Exclude carotid artery dissection.
Echocardiography	Clinical features and routine tests raise possibility of endocarditis or structural disease of the valves or myocardium. Unexplained stroke in a young person.
Angiography/MRI angiography	Prelude to carotid surgery. Exclude cerebral vein thrombosis.
Blood cultures Syphilis serology Antinuclear factor Anti-DNA antibodies 'Sticky blood tests' (lupus anticoagulant, antiphospholipid antibodies, antithrombin III, activated Protein C resistance, Factor V Leiden, Protein S & C, sickling tests)	Unexplained stroke, especially in a young person. Associated clinical features.

In contrast, lacunar infarcts are more likely caused by occlusion *in situ* and have a much lower prevalence of carotid artery occlusion or severe carotid stenosis. Posterior circulation infarcts have a more heterogeneous aetiology, including thrombosis, embolism and dissection, but rarely have clinically significant carotid artery disease.

#### *Primary intracerebral haemorrhage (Box 6)*

Younger individuals with intracerebral haemorrhage are more likely than older people to have a surgically

treatable lesion, such as an arteriovenous malformation (AVM) or aneurysm. In addition, aneurysms are much less prevalent in non-lobar haemorrhage (i.e. basal ganglia, thalamus, cerebellum, brainstem). The practical upshot is that in elderly patients cerebral haemorrhage is usually thought to be due to degenerative small vessel disease or amyloid angiopathy (look it up!) both of which are not amenable to surgical treatment. However, younger individuals, particularly those presenting with a lobar haemorrhage and no other risk factors (e.g. hypertension), should be considered for neurosurgical investigation.

**Box 6. Main Causes of Primary Intracerebral Haemorrhage (PICH)**

*Lobar PICH*

- Age under 65 yrs
  - Arteriovenous malformation (AVM)
  - Saccular aneurysm
  - Small vessel degeneration (e.g. microaneurysms)

- Age over 65 yrs
  - Small vessel degeneration
  - Amyloid angiopathy
  - Saccular aneurysm

*PICH of basal ganglia, thalamus, cerebellum, brainstem*

- Arteriovenous malformation (AVM)
- Small vessel degeneration

- Small vessel degeneration
- Amyloid angiopathy
- AVM

NB. The epidemiology of PICH is not well researched. This scheme summarises a “best-guess” based on current knowledge.<sup>1</sup>

**WHAT PROBLEMS HAS IT CAUSED?**

**Assessment**

The management of the stroke patient should be regarded as a problem-solving process requiring detailed assessment of impairments, disabilities and handicaps and an analysis of their causes. It should also include the identification and treatment of common complications of stroke and any comorbid illness (e.g. angina, cardiac failure, arthritis, peripheral vascular disease) which may impede recovery.

**Box 7. Assessment of Problems**

<i>Problem</i>	<i>Assessment</i>
Pre-stroke dependency	Modified Rankin score
Swallowing	Bedside swallowing assessment
Mobility	Rivermead Mobility index, Barthel index
Activities of daily living	Barthel index
Visuo-spatial dysfunction	Star cancellation test, picture drawing
Intellectual impairment	Abbreviated Mental Test score

In routine practice it is useful to have a standard proforma (and some assessment scales) to assist with patient assessment (Box 7). This is essential to ensure a rational future management plan.

**Complications**

A number of complications occur early after stroke which may well act as barriers to recovery. The commonest are listed in Box 8.

**Box 8. Complications of stroke**

<i>Early (days–weeks)</i>	<i>Late (months–years)</i>
Urinary tract infection	Falls
Chest infection	Depression/anxiety
Pressure sores	Pain (various)
Falls	Urinary tract infection
Pain (various)	Chest infection
Depression/anxiety	Recurrent stroke
Recurrent stroke	Seizure/blackouts
Deep vein thrombosis	

**WHAT TREATMENT DOES THIS PATIENT REQUIRE?**

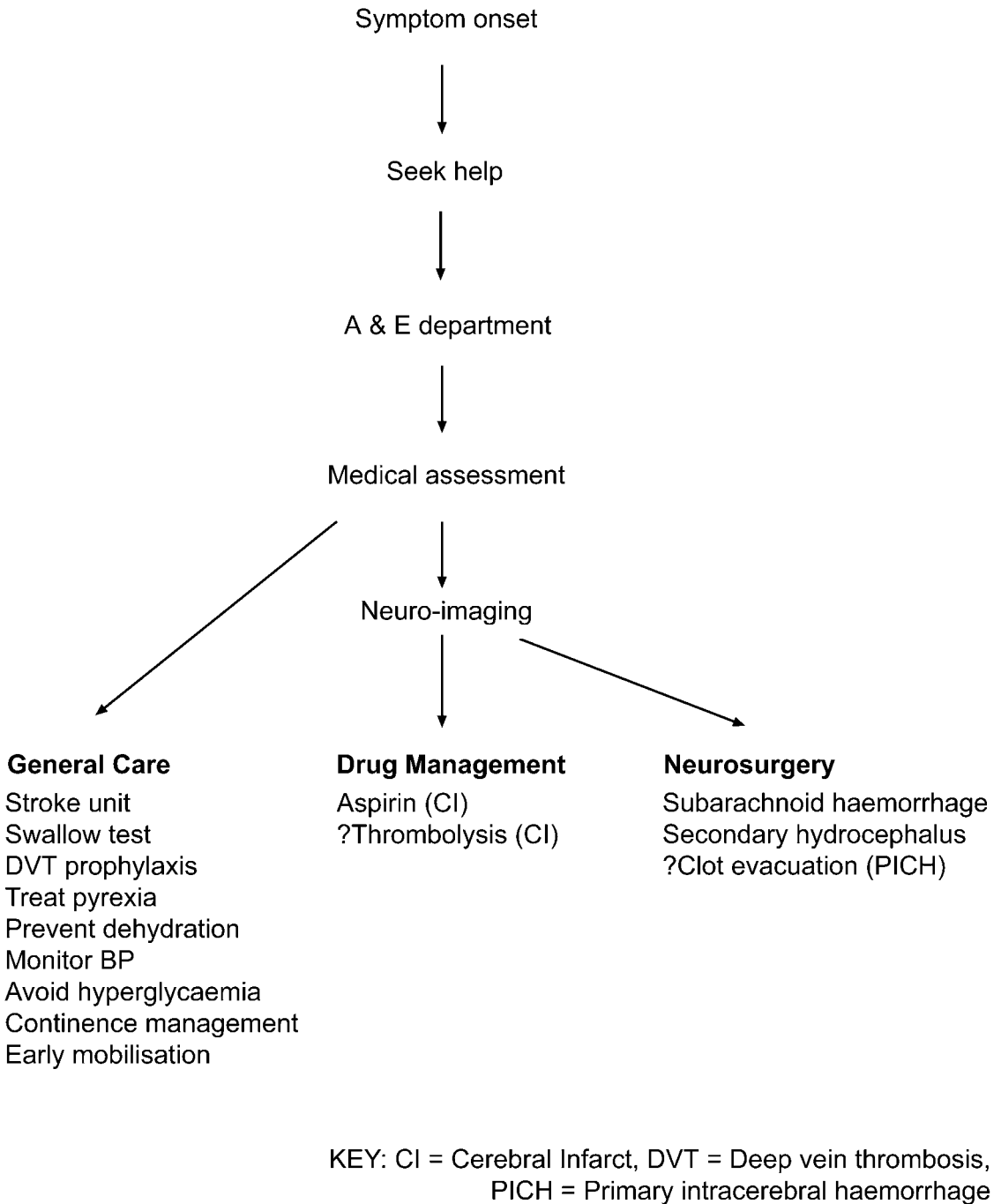
We have deliberately combined acute care and rehabilitation in one section (see Figure 8) because the arbitrary division of the two can lead to a number of problems. First, rehabilitation in the broadest sense should begin as soon as the patient is in contact with health care staff and to ‘wait for rehabilitation’ is to neglect your patient’s needs. Secondly, patients being managed in a rehabilitation setting often develop acute medical problems and need ‘acute care’.

**The Optimal Setting for Stroke Care**

There is considerable interest in identifying the best setting for managing stroke patients.

*Home versus hospital*

A number of clinical trials have compared the standard hospital-based care with attempts to provide stroke care within a home setting.<sup>3</sup> There is limited information to guide policy-making but on



**Figure 8.** Summary of acute stroke management.



current evidence there are no grounds to move away from the standard hospital-based care for acute stroke patients. Earlier discharge home with more rehabilitation in the home may prove to be an effective service model for the future.<sup>4</sup>

### *Stroke unit versus general ward*

There is now considerable evidence from clinical trials to show that stroke patients who are managed in an organised stroke unit are more likely to survive, return home and regain independence than those who receive conventional care in a general ward.<sup>5</sup> This then raises the question of what kind of stroke unit is most appropriate. Although various models of stroke unit care have been tested, they all had the following features in common:

- Inter-disciplinary team care coordinated through regular meetings
- The ability to provide rehabilitation for several weeks if necessary
- Staff with an interest in stroke and/or rehabilitation
- Education programmes and training in stroke.

The most researched stroke unit model is the “Scandinavian” approach which combines acute care with rehabilitation, but there is also evidence to support stroke rehabilitation units and, to a lesser extent, units which have provided assessment and rehabilitation for stroke patients within a mixed setting. This is of particular interest to geriatricians who may believe (with some justification) that their processes of care are as good in their general rehabilitation ward as in a disease-specific stroke unit.<sup>6</sup> The current evidence suggests that geriatric assessment units would be better than acute medical wards for the rehabilitation of stroke patients, but it is not possible to say if they are as good as a disease-specific stroke unit.

## **Acute Medical Treatment**

### *Aspirin*

Aspirin (300 mg per day) should be prescribed acutely to all patients in whom a cerebral haemorrhage has been excluded.<sup>7</sup> Aspirin should be withheld in the acute phase until a CT scan of brain has been performed and should be avoided in

cerebral haemorrhage. Although the net benefit from aspirin is small (preventing one death or disability per 100 patients treated), the treatment is simple, safe and usually well tolerated. The maintenance aspirin dose is discussed later.

### *Thrombolysis*

Several randomised trials have been carried out with tissue plasminogen activator and streptokinase which indicate that thrombolysis may improve outcomes in carefully selected patients.<sup>8</sup> However, there is a risk of haemorrhagic transformation of the infarct and increased adverse outcomes. For this reason, none of these drugs are approved for use in the UK.

### *Heparin*

Several large randomised trials have shown that there is no net benefit from the routine use of heparin (unfractionated or low molecular weight heparin) in stroke patients.<sup>9</sup> Within these trials, heparin has been relatively safe and so can probably be used with caution in individuals believed to be at higher embolic risk (e.g. rheumatic heart disease). However, routine use of heparin should be discouraged.

### *Antihypertensives*

Blood pressure is often elevated in acute stroke, but usually settles spontaneously over the following days. Lowering blood pressure acutely in stroke has been associated with a poorer outcome and may increase infarct size. If the patient is already on an antihypertensive agent it is probably safe to continue this if care is taken to avoid hypovolaemia. In the rare occasion when the blood pressure is very high (>220/120 mmHg), and there are signs of malignant hypertension or aortic dissection, cautious lowering of blood pressure with oral or intravenous beta-blockers, or intravenous sodium nitroprusside, may be indicated with careful monitoring.

### *Neurosurgery*

There are current interests in early neurosurgical intervention for primary intracerebral haemorrhage predominantly to evacuate the blood clot, but also leading to treatment of any underlying arteriovenous

malformation (AVM) or aneurysm. A randomised trial is currently under way.

### *Other therapy*

There have been many randomised trials of various neuroprotective therapies (including corticosteroids and calcium antagonists); however, to date none have produced a routinely available effective drug therapy.

## **General Care**

In all patients with disability good general care is essential. It is important to be aware of the potential complications of stroke and the steps for their prevention or treatment.<sup>1</sup> Particular care should be taken with the following:

### *Airway/breathing*

The airway must be maintained and the safety of swallowing assessed. Regular chest physiotherapy may be required in immobile patients.

### *Pyrexia*

Raised temperature is associated with a poorer outcome following stroke. Fever should prompt a search for evidence of infection or an alternative cause (e.g. deep vein thrombosis) and should be treated promptly with paracetamol and a cooling fan.

### *Fluids and nutrition*

Care must be taken to avoid dehydration. If swallowing is not safe, food and fluids may have to be provided via intravenous or nasogastric routes. Hyperglycaemia post-stroke appears to be associated with a poorer outcome and should be avoided. The optimal strategy for hydration is not currently known, but dehydration may increase the risk of electrolyte abnormalities, vascular events and urinary tract infection. If the recovery of swallowing is likely to be delayed, insertion of a PEG (percutaneous endoscopic gastrostomy) tube will provide a more convenient means of enteral feeding. The optimal timing of this remains uncertain. (See chapter on PEG feeding by Terry.)

### *Prevention of complications*

Good nursing care and early mobilisation may help prevent complications such as pressure sores, pneumonia, venous thromboembolism, spasticity and shoulder injuries. Good positioning and early mobilisation may also prevent episodes of hypoxia. Avoidance of the use of catheters probably helps prevent urinary tract infections.

### *Prevention of deep vein thrombosis (DVT)*

There is no net benefit in the routine use of heparin in the recovery of stroke patients. For this reason many practitioners recommend the use of physical measures (early mobilisation and graduated compression stockings) for the prevention of DVT. Care must be taken with graduated compression stockings in the presence of peripheral vascular disease.

### *Others*

It is important to remain vigilant for the signs of anxiety and depression, which are relatively common after stroke and may require anti-depressant treatment, often long-term. Cognitive impairment and vascular dementia can follow either recurrent or single stroke and may adversely affect rehabilitation.

## **Goal Planning/Rehabilitation**

Much of the management of stroke patients incorporates an interdisciplinary process in which the patient (and carers) may interact with a wide variety of health care professionals. The key members of the interdisciplinary team and their roles are outlined as follows:

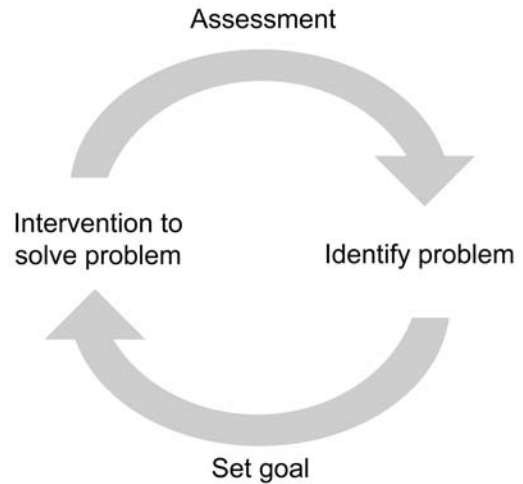
- *Doctor.* The physician must have a working knowledge of the diagnosis, prognosis, complications and co-morbidities of stroke. They are often involved in battling for resources for the stroke team and chairing the interdisciplinary meetings.
- *Nurse.* In organised interdisciplinary stroke care nurses have the central role in which they provide for the daily needs of patients, prevent complications, provide regular reassessments of their progress and provide support for patients and family.

- *Physiotherapy.* The physiotherapy role is largely the recovery of movement and so they will be involved in assessing motor and sensory function, advising and managing positioning and handling issues, training in walking and the provision of aids and also the prevention of complications (particularly respiratory).
- *Occupational therapy.* The key role of OT is the recovery of functional tasks. Therefore they will provide more detailed assessments of activities of daily living and other aspects of occupational performance. In particular, they will assess visuo-spatial function, provide aids and appliances and assess patients' abilities within the home setting.
- *Speech and language therapists.* Their key role is to aid the recovery of communication, speech and swallowing and so they will be involved in assessments of these functions and developing strategies to overcome problems. They will also be involved in the more detailed assessment of swallowing problems.
- *Social work.* Within the United Kingdom medical social workers usually help access to services and facilities within a community setting.
- *Others.* Clinical psychologists are frequently involved in managing psychological and behavioural complications of stroke. Dieticians may be needed in the management of nutritional problems, psychiatrists for the management of affective complications of stroke, and ophthalmologists to help manage individuals with visual problems.

### Interdisciplinary Team Process

This involves a goal planning cycle (Figure 9) in which the patient is assessed, a problem identified, a recovery goal is set, an intervention provided and then the progress is assessed. This process can occur on several time scales, for example a short-term goal in a patient with mobility problems might be to enable transfers with one nurse, whereas a longer-term goal would be to promote independent walking.

A number of disciplines may carry out a number of assessments and identify a range of problems. Therefore, good coordination (through weekly interdisciplinary meetings) is essential. This should ensure that all members of staff have compatible goals and objectives and are providing a standard message to patients and carers. It is particularly important that nurses are involved in this process and that their daily interaction with the patient



**Figure 9.** Goal planning cycle.

reflects the team goals. The interdisciplinary team is also responsible for identifying any failure to progress with rehabilitation and for reassessment of the patient to define any potential barriers. These may be physical (e.g. pneumonia), psychological (e.g. depression), social (e.g. unsuitable housing) or cultural (e.g. family's reaction to disability).

### Prognostication

Accurate prognostication is needed to ensure that goals are reasonable and achievable. Unfortunately, making an accurate prognosis in an individual patient can be very difficult and it is unwise to 'write off' anyone without a period of rehabilitation. Some simple practical (but not very accurate) markers of a poor prognosis are outlined in Box 9.<sup>1</sup>

#### Box 9. Practical markers of poorer prognosis

Older age  
 Pre-stroke dependency (Rankin scale >2)  
 Initially reduced conscious level  
 Severe hemiplegia (MRC scale <3)  
 Impaired mobility (e.g. no sitting balance)  
 Urinary incontinence  
 Visuo-spatial dysfunction

NB: No predictive systems are accurate for the individual patient. If in doubt—err on the optimistic side.

## Discharge Planning

Early on in the rehabilitation process the team should be identifying a likely discharge date and identifying barriers to the patient returning home. A number of key issues to consider are:

- Previous functional level
- Severity of stroke
- Support available at home
- Wishes of patients and family

Nearer the time of discharge (usually when the patient has regained some mobility) an occupational therapy home visit is often required to assess their function in the home setting and identify barriers to discharge. Social work input is often required at this stage to arrange appropriate services and allowances.

It is also important to utilise the appropriate voluntary sector services (such as clubs run by the Stroke Association or Chest Heart and Stroke Scotland) which may be particularly useful for individuals with dysphasia. Post-discharge review is also needed to identify unexpected problems and to pick up on later complications, such as the emotional impact of stroke on patients and carers.

## WHAT CAN BE DONE TO PREVENT FURTHER VASCULAR EVENTS?

### Prevention

The management of stroke patients must address the risk of further vascular events. The risk of further stroke following a transient ischaemic attack (TIA) or minor stroke is approximately 10% in the first year and 5% per year thereafter.<sup>1</sup> Ischaemic heart disease and peripheral vascular disease are also common with myocardial infarction being the commonest cause of death after TIA or minor stroke. Strategies for preventing further vascular events can be outlined as follows:

### Treat the Underlying Cause if Possible

A few stroke patients will have a specific pathology of thrombosis (e.g. polycythaemia, thrombocythaemia, clotting disorder), embolism (e.g. bacterial endocarditis) or of the vessel wall (e.g.

giant cell arteritis, syphilis). They require specific treatment of the underlying problem.

## Risk Factor Management

The main vascular risk factors to be addressed are:

### *Blood pressure*

There is good evidence that reduction of blood pressure is an effective primary prevention measure for stroke, but the value of blood pressure reduction after stroke has been less clear. It is probably as valuable as in primary prevention but care should be taken to avoid over-aggressive blood pressure reduction early on (first two weeks).

### *Internal carotid artery stenosis*

For patients who have recently had a transient ischaemic attack (TIA) or minor ischaemic stroke in the territory of a severely stenosed (greater than 70%) internal carotid artery, successful carotid endarterectomy almost abolishes the risk of further ipsilateral stroke.<sup>1</sup> Surgery is not justified with milder stenosis or in most patients with asymptomatic stenosis. Therefore, patients have to be carefully selected for this procedure. It is inappropriate routinely to perform carotid duplex scanning in patients who have had a posterior circulation stroke. Extracranial artery angioplasty has been evaluated in a clinical trial but its full role is unclear.

### *Atrial fibrillation*

Non-rheumatic atrial fibrillation is a recognised risk factor for stroke and anticoagulation reduces the risk of further stroke (see anti-thrombic therapies). Cardioversion in atrial fibrillation is of recognised value in the absence of clinically significant structural heart disease, but elderly stroke patients often have underlying heart problems which render permanent cardioversion impossible.

### *Diabetes mellitus*

There is now evidence that good diabetic control reduces the risk of micro-vascular complications and that tight blood pressure control in type II diabetes mellitus reduces macro-vascular

complications including stroke.<sup>10</sup> It seems reasonable to optimise the diabetic control and blood pressure of any diabetic stroke patient.

### *Cholesterol*

Lowering plasma cholesterol levels is of value in individuals with symptomatic ischaemic heart disease and this may also apply to ischaemic stroke. Trials are currently under way in the elderly age group, but cholesterol lowering is certainly worthwhile in the younger stroke patient (under 70 years).

### *Lifestyle factors*

Smoking should be stopped and alcohol should be taken only in moderation (up to one unit per day). Regular exercise should be encouraged and diet modified to reduce salt and fat intake and to increase fruit and vegetable consumption.

### **Anti-thrombotic Therapies**

Anti-thrombotic therapies have an established role in preventing recurrent stroke and other vascular events. They also have the additional benefit of preventing venous thromboembolism.

#### *Antiplatelet therapy*

Low dose aspirin reduces the risk of serious vascular events (stroke, myocardial infarction, peripheral vascular disease) by about 25% in a wide range of patient groups. No aspirin dose has been shown to be more effective than 300 mg per day although a lower dose (75 mg) can probably be used without loss of efficacy. Recent studies have indicated that clopidogrel 75 mg per day or the combination of aspirin and modified-release dipyridamole are slightly more effective than aspirin alone. Most practitioners use aspirin as a first line, reserving the more expensive options for high-risk individuals or those with recurrent symptoms.

#### *Anticoagulant therapy*

Adjusted dose warfarin is very effective in preventing stroke in patients with non-rheumatic atrial fibrillation.<sup>1</sup> The drug of choice is warfarin with an international normalised ratio (INR) of between 2–3. However, it is often difficult in an

elderly patient to judge accurately the balance of risks and benefits of such an approach. Aspirin is an appropriate alternative measure, though less effective.

### **WHAT ADVICE SHOULD BE GIVEN TO THE PATIENT AND FAMILY?**

Patients and carers often complain that they have not received appropriate information and advice following a stroke.

Advice should be provided in both written (e.g. Stroke Association booklets) and verbal form covering the following areas:

- *What is a stroke?* Provide a simple explanation of stroke and the type of stroke the patient has experienced.
- *Why did it happen?* Explain the main risk factors and their management. It is often useful to dispel myths (e.g. that exercise or sexual activity will bring on a stroke).
- *Common aspects of the impact of stroke.* Explain the common sequelae of stroke (e.g. tiredness, depression, headache, loss of confidence).
- *General aspects of recovery.* It is useful to explain that recovery is usually more rapid early on but may continue slowly for many months (or even years).
- *Driving.* Driving is not allowed for one month after a stroke or TIA. The DVLA and insurer should probably be informed and progress reassessed. A formal driving assessment may be required, especially if there are cognitive deficits, inattention and minor visual field defects.
- *Employment.* Return to employment depends on the nature of the job and severity of impairments.
- *Sexual relationships.* There is rarely any reason not to resume sexual activity after a stroke.
- *Recurrence of stroke.* The risk of further stroke is higher than in the general population and averages at 5–10% per year. We usually advise that non-recurrence is much more likely than recurrence.

### **CONCLUSIONS**

We have tried to provide a framework for the assessment and management of stroke patients. As with most aspects of medicine there remains areas of ignorance where the best management is unknown;

**Table 3.** Summary of stroke classification.

Classification	Cerebral Infarction				Primary Intracerebral Haemorrhage		
	TACS	PACS	LACS	POCS	Lobar	Basal ganglia/ Thalamus	Cerebellum/ brainstem
Typical presentation	HCD Hemiparesis Hemianopia	HCD Hemiparesis	Hemiparesis Hemisensory loss	Brainstem, cerebellar symptoms	HCD Hemiparesis	Hemiparesis Hemisensory loss	Brainstem, cerebellar symptoms
CT scan (look for ...)	Large cortical infarct	Limited cortical infarct	Small subcortical infarct	Infarct in brainstem, cerebellum, occipital lobe	Haemorrhage in lobar white matter	Basal ganglia, thalamus haemorrhage	Brainstem, cerebellar haemorrhage
Cause (think of ...)	Embolicism from heart or carotids (atrial fibrillation)	Embolicism from heart or carotids (atrial fibrillation)	Thrombosis (hypertension, diabetes)	Cardiac embolism, thrombosis	AVM Aneurysm	Vascular degeneration, AVM	Vascular degeneration, AVM
Problems (look for ...)	Motor loss Sensory loss Dysphasia Neglect Hemianopia Dysphagia	Motor loss Dysphasia Neglect Dysphagia	Motor loss Sensory loss Ataxia	Ataxia Motor loss Cranial nerve palsy Dysphagia	Motor loss Dysphasia Neglect Dysphagia	Motor loss Sensory loss (dysphasia)	Ataxia Motor loss Cranial nerve Dysphagia palsy
Prognosis (at 1 year)							
Survival	60%	85%	90%	80%	<80%	<70%	<70%
Recurrence	5%	20%	10%	20%	10%	2%	2%
Independence	5%	60%	70%	70%	?	?	?
Mobility	40%	70%	80%	80%	?	?	?

NB. Survival data for primary intracerebral haemorrhage only available to 30 days post stroke.

some of these are outlined in Box 10. Table 3 provides a summary of stroke classification together with some typical features of each section of the classification. Our description has involved some generalisations and individual patients may vary considerably from the “typical” process, but we hope it provides a useful framework around which to plan patient management.

### Box 10. Areas of Ignorance

- Control of blood pressure after stroke—when and what to treat?
- Atrial fibrillation in acute stroke—how soon to anticoagulate?
- Does lowering blood glucose in acute stroke improve outcome?
- Should thrombolysis be used in posterior circulation strokes?
- The optimal application of thrombolytic therapy in acute stroke.
- The role of hypothermia in acute stroke.
- The indications for surgical evacuation following primary intracerebral haemorrhage and extensive total anterior circulation strokes.
- The role of neuroprotein in acute stroke.
- Supplementary feeding post-stroke—how soon to feed and by which route?
- Should lipid lowering therapy be used in the very elderly (>75 years)?
- The role of balloon angioplasty and stenting in carotid and vertebral artery stenosis.
- Optimal treatment of depression post-stroke—choice of treatment and duration.
- Optimal management of incontinence post-stroke.
- The optimal intensity and amount of physical and occupational therapy post-stroke.
- The relationship between stroke and cognitive impairment.
- Prediction of stroke outcomes.

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### SELF-ASSESSMENT QUESTIONS

1. True or false? In acute stroke:
  - a) Thrombolytic therapy can be given up to 24 hours after symptom onset.
  - b) Clinical examination reliably differentiates between primary intracerebral haemorrhage and thrombotic stroke.
  - c) Hyperglycaemia is associated with a poorer outcome.
  - d) Treatment in a stroke unit reduces mortality.
  - e) A blood pressure of 170/100 mmHg should be lowered promptly.
2. A 62-year-old man presents with right arm and leg weakness, dysarthria and a right homonymous hemianopia. He is found to be in atrial fibrillation of new onset. He smokes 20 cigarettes per day and takes bendrofluzide 2.5 mg daily for hypertension.

### REFERENCES

The comprehensive text by Warlow *et al.* (1996) provides an excellent general reference. *The Cochrane Library* is a useful source of information about stroke treatments.

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Which of the following statements are correct?

- a) Clinically he has suffered a left total anterior circulatory stroke (TACS).
- b) Aspirin should be given before CT scanning.
- c) If he makes a full recovery he can return to driving immediately.
- d) His risk of stroke recurrence in the first year is <5%.
- e) Elective DC cardioversion should be considered.

3. A 34-year-old woman presents with a right posterior circulation stroke, confirmed as infarction on CT scanning. She has no cardiovascular risk factors or family history of note.

Which of the following further investigations be helpful?

- a) Fasting lipid profile.
- b) Carotid duplex scanning.
- c) Trans-oesophageal echocardiography.
- d) Syphilis serology.
- e) Anti-thrombin III.





**PART 3**  
**SELECTED TOPICS**



# 14. The management of Parkinson's disease

R. Jolyon Meara

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## WHAT IS PARKINSON'S DISEASE?

Parkinson's disease (PD) is a disease of elderly people with age-specific prevalence rates steeply increasing into extreme old age. In cross-sectional studies two-thirds of subjects with PD will be aged over 70 years old. PD results from dopamine deficiency in a part of the basal ganglia in the forebrain called the corpus striatum (caudate nucleus and putamen). This deficiency state arises from cell death in a large pigmented mid-brain nucleus called the substantia nigra that provides critical dopaminergic input to the basal ganglia via the nigrostriatal tract. With progression PD can affect many parts of the brain and peripheral nervous system. Surviving neurones contain typical inclusions called Lewy bodies. PD is primarily a disorder of voluntary motor control. There is a particular difficulty in the appropriate execution of automatic learnt motor plans.

## HOW DO YOU DIAGNOSE PD?

The diagnosis of PD depends on bedside clinical skills. This may change as *in vivo* imaging of cerebral function based on SPECT scanning becomes more widely available and new investigative imaging agents are developed. Clinical diagnostic criteria for PD have been suggested (see Hughes *et al.*, 1992).

The major clinical features of PD consist of:

- **Akinesia** (difficulty initiating voluntary movement, slowness of movement, difficulty with sequential complex movements, decreased amplitude of movement, and rapid fatigability of repetitive movements)

- **Rigidity** (increased resistance of relaxed muscle to passive stretch)
- **Tremor** (rapid, involuntary rhythmic oscillation of a body part, typically occurring at rest when muscles are relaxed with a frequency of 4–5 Hertz, tremor of the hand characteristically causing a pill-rolling tremor at rest)
- **Postural instability** in more advanced disease resulting in falls.

## WHAT IS THE DIFFERENCE BETWEEN PARKINSONISM AND PD?

The presence of upper limb akinesia and rigidity, with or without tremor, indicates a diagnosis of parkinsonism. Parkinsonism can result from many causes, the commonest of which is PD. Overall PD accounts for around 70% of cases of parkinsonism. However, with increasing age parkinsonism not due to PD (vascular, drug induced, multiple system degeneration, parkinsonism in association with dementia) appears to become increasingly common. This impression needs to be established by careful clinical studies. The prevalence of parkinsonism increases even more steeply than PD with age, particularly if cases with akinesia and rigidity confined to the lower limbs associated with gait disturbance are also included.

## HOW GOOD ARE WE AT DIAGNOSING PD?

Diagnostic accuracy decreases with increasing age of the patient.

Clinicopathological studies show that around 25% of patients under the care of experts thought to have PD at death will turn out to have other diagnoses at post-mortem. In one large community study in only 74% of people taking anti-parkinsonian medication could parkinsonism be confirmed by examination. Only 53% of the subjects with parkinsonism met clinical diagnostic criteria for PD. Over half of the subjects had treatment initiated by their GP. Very few subjects had been seen by consultants with a specialist interest in PD. The diagnosis of both PD and parkinsonism can be very difficult in elderly people. A properly conducted trial of anti-parkinsonian medication is required to help resolve diagnostic difficulty.

### **WHAT CONDITIONS ARE COMMONLY MISDIAGNOSED AS PD?**

- Essential tremor is commonly mistaken for PD, often leading to unnecessary treatment with expensive and toxic drugs and considerable anxiety for patient and family. Around 10–20% of cases misdiagnosed as PD will have this condition.
- Vascular parkinsonism (predominant involvement of the lower half of the body with leg and axial rigidity, gait apraxia, and preservation of arm function).
- Drug-induced parkinsonism (DIP) can mimic PD and usually results from the use of neuroleptic (dopamine receptor blocking) drugs. Neuroleptic drugs used to treat major psychiatric illness commonly cause DIP. Elderly patients with delirium are also still regularly and often inappropriately prescribed these drugs. Newer atypical neuroleptic drugs much less commonly cause DIP. Drugs that can cause DIP are often prescribed for elderly people with dizzy spells (prochlorperazine and cinnarizine), and for those with gastrointestinal disturbances (metoclopramide).
- Parkinsonism in association with dementia, including dementia with Lewy bodies.

### **HOW DOES PD PRESENT IN OLDER PEOPLE?**

Sub-types of disease in PD appear to exist though further careful clinical studies are needed. Subjects

with late-onset PD (arbitrarily defined as starting after 70 years old) tend to have an akinetic-rigid presentation without tremor, respond less well to medication, progress more rapidly, and develop dementia sooner than subjects with earlier-onset disease. The motor signs of PD can be overshadowed by other aspects of PD including cognitive impairment, depression, anxiety, fatigue, muscle and joint pains, weight loss, autonomic failure, a general ‘slowing down’, and decreased functional ability with no apparent cause. Falls are not uncommon as a presenting feature of PD in elderly subjects in whom the diagnosis has been delayed. Dysarthria and dysphagia are distressing symptoms of PD that may be present at diagnosis or develop quite quickly in older people. The response to drug treatment is disappointing. Bladder and bowel symptoms due to autonomic failure, poor mobility and concurrent diseases are very common in older patients presenting with PD.

### **WHY IS THE DIAGNOSIS MISSED FOR SO LONG IN ELDERLY SUBJECTS WITH PD?**

Elderly patients may have symptoms for longer before diagnosis than younger subjects, though this should be established by scientific study. Delay in diagnosis may occur because of:

- a) the early non-specific presentation of PD;
- b) concurrent diseases (dementia, stroke, arthritis, impaired mobility) can make it difficult to detect the motor signs of PD;
- c) the patient, family and doctor erroneously attribute many of the early signs of PD to the inevitable effects of ageing;
- d) in some patients presenting with advanced PD, the medical record indicates that the diagnosis had in fact been made earlier, but was not acted upon or communicated to the patient or family. This can occur if the diagnosis is made by chance after an acute admission to hospital or after consulting about an unrelated matter. In part, this may be to avoid causing unnecessary anxiety for the patient, especially if the symptoms of PD (in the doctor’s opinion) are mild and are not related to problems with which the patient presented.

## **HOW SHOULD PD BE MANAGED AROUND THE TIME OF DIAGNOSIS?**

As with most chronic and progressive diseases, too little emphasis has been placed on how the diagnosis is communicated to the patient, spouse and family. How information-giving is handled can have long-lasting effects on how well individuals cope with this disease. A clear statement of the known facts can be supported by the provision of explanatory leaflets, an early review by the doctor, and the continuing input from the nurse specialist (if available). Details about voluntary bodies such as the Parkinson's Disease Society should also be given at this stage, or at the next review. Lying and standing blood pressure and pulse should be measured to detect postural hypotension. Co-morbidities should be assessed with particular emphasis on current medication. As PD is the only degenerative neurological disease for which effective treatment currently exists, the doctor may not appreciate the enormity of the diagnosis faced by the patient and may be much more optimistic. Comprehensive assessment of physical, cognitive, psychosocial function, as well as social-environmental factors, should be undertaken. This will require the input from an interdisciplinary team and should ideally include the use of standardised assessment instruments to assess disease severity, cognition, mood, ADL, and health-related quality of life. Early referral to physiotherapy, occupational therapy and speech and language therapy appears to be of benefit in delaying the onset of disability, though more studies are needed in this area. Objective measures of akinesia (simple motor tests and timed walking) can help with the overall assessment of response to treatment. Input from a social worker is important to assess social needs and to provide information about financial support, such as the Attendance Allowance. Driving is often an important issue and fitness to drive should be discussed with the patient. A key decision at this time is when and which drug therapy should be started. Patients should have life-long access to a specialist team and remain under specialist medical review.

## **WHEN SHOULD DRUG TREATMENT BE STARTED?**

Treatment should be started when the disease is causing handicap and reducing quality of life. Most

elderly patients will need to be started on treatment at or soon after diagnosis. Drug treatment can improve the motor impairment in PD but does not delay the progression of PD.

## **WHAT DRUGS SHOULD BE USED TO START TREATMENT IN PD?**

Levodopa is the mainstay of treatment for older patients with PD and is given in conjunction with a dopa decarboxylase inhibitor (Sinemet™, Madopar™). Levodopa should be started at a dose of 50 mg three times daily with food and then slowly titrated upwards by 50 mg every four days until a dose of 200 mg three times daily is achieved. Patients need to be reviewed after six weeks' treatment to establish the response to treatment and to either reduce or increase further the levodopa dose. Common side effects from levodopa are nausea and vomiting, postural hypotension, and drowsiness. At high dose and in any elderly patient with pre-existing cognitive impairment, levodopa can cause hallucinations, delirium and psychosis. Nausea and vomiting can be controlled with domperidone 20 mg three times daily on starting levodopa. Domperidone can be withdrawn in nearly all patients after a few weeks of treatment. Initial monotherapy with dopamine agonist drugs may be indicated in a physiologically fit minority of older people presenting with PD who are likely to live several years with their disease.

## **WHAT DRUGS CAN BE ADDED LATER TO IMPROVE DISEASE CONTROL?**

Late-onset PD is rarely associated with the degree of levodopa-induced dyskinesia seen in younger patients. However, wearing off of drug effect before the next dose does occur in older patients as well as peak dose choreiform dyskinesia, though this rarely troubles the patient. Wearing off in older patients can be improved by the addition of entacapone (a drug that inhibits the peripheral breakdown of levodopa), dopamine agonist drugs, or by the use of delayed-release formulations of levodopa. Dopamine agonist drugs are poorly tolerated in elderly patients with cognitive

impairment, levodopa-induced hallucinosis, or postural hypotension. Sudden ‘off’ periods that may take the form of motor freezing, panic attacks, painful crises, breathlessness or painful dystonia can respond dramatically to apomorphine, a dopamine agonist drug administered parenterally by subcutaneous injection. Nighttime problems of pain, restless legs, and ‘off’ periods can be improved by the use of long-acting oral dopamine agonist drugs such as pergolide and cabergoline.

### **WHY IS THE RESPONSE TO TREATMENT OFTEN POOR IN OLDER PATIENTS WITH PD COMPARED TO YOUNGER SUBJECTS?**

- The diagnosis may be wrong.
- Multiple CNS pathology in the cerebral cortex and basal ganglia reduces the benefit of drug treatment.
- Poor tolerance of side effects from medication with failure to reach a maximally therapeutic dose.
- Under-treatment with anti-parkinsonian drugs.
- Poor compliance with complex and multiple drug regimes.
- Concurrent diseases masking any drug benefit.

### **WHY DON'T PEOPLE REPORT FEELING BETTER ON DRUG TREATMENT DESPITE A REDUCTION IN AKINESIA, RIGIDITY AND TREMOR?**

Many of the features of PD at presentation in older subjects that cause most of the handicap do not respond or may even be made worse by dopaminergic drugs. These includes dysarthria, dysphagia, poor handwriting, impaired balance, falls, poor mobility, sudden freezing, dizziness on standing, and bladder and bowel symptoms. Cognitive impairment due to PD or other pathology can limit the usefulness of drug treatment. Depression, anxiety and apathy are common in PD and are major determinants of quality of life for the patient, spouse and family. Depression and anxiety can respond well to specific drug and psychological interventions.

### **WHAT LONG-TERM STRATEGIES SHOULD BE USED IN PD?**

Rehabilitation should form the central part of any strategy, with an emphasis on assessment, reassessment, goal setting and team working. A movement disorder clinic supported by a PD specialist nurse who can work in the community with patients and families is one effective model of care in PD. Education, information and health promotion are also key elements of long-term care.

### **HOW SHOULD ADVANCED PD BE MANAGED?**

With disease progression a situation can be reached where drug treatment no longer improves the major disabling features of PD such as dementia, falls, immobility, dysarthria and dysphagia. At this stage dopaminergic drugs may be doing more harm than good and can often be slowly reduced with good effect. Simple drug regimes should be used at this stage. Palliative care is an important aspect of the management in the final disease stages and requires good liaison with primary care teams and often the private nursing sector.

### **HOW CAN WE IMPROVE CARE THROUGH FURTHER RESEARCH IN THIS FIELD?**

The clinical presentation and progression of PD in older people is poorly defined. The impact of depression and cognitive impairment in PD needs further study in terms of prevalence, response to treatment and impact on health-related quality of life.

Elderly patients are poorly represented in industry-sponsored drug trials. The efficacy and tolerability of many drugs widely used to treat PD have never been established in older people.

The best way of improving the care of people with PD in residential and nursing homes and after admission for medical and surgical emergencies needs to be determined.

There is little evidence for the effectiveness of rehabilitative strategies in PD ranging from specific treatments used to improve motor impairments,

through to the value of goal setting and multidisciplinary working.

The impact of PD on families, spouses and carers is still poorly understood.

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### SELF-ASSESSMENT QUESTIONS

Which of the following are true or false?

1. The commonest cause of hand tremor in older people is PD.
2. Cognitive impairment is usually mild and non-progressive in older subjects with PD.
3. PD progresses faster in older compared to younger subjects.
4. Drug-induced motor complications are less common in older subjects.
5. The sensation of breathlessness can be a distressing feature of 'off' periods in PD.
6. Diagnostic accuracy of around 80% at presentation in PD can be achieved using clinical diagnostic criteria.





# 15. Syncope and dizziness

Gerallt Owen and Shona McIntosh

## SYNCOPE

*By Jove, what a rate my heart is galloping at!  
These confounded palpitations get worse  
instead of better...Still he might only have  
fainted; it might only be a fit.*

*Sir Christopher knelt down, unfastened  
the cravat, unfastened the waistcoat, and laid  
his hand on the heart. It might be syncope; it  
might not—it could not be death. No! that  
thought must be kept far off.*

George Elliot, 1858, *Scenes of clerical life*

## DEFINITION

Syncope is a loss of consciousness due to a temporary impairment of cerebral perfusion. (The word syncope is Greek and means abrupt interruption or pause.)

## The Scope of the Problem

Older individuals are prone to syncope due to age-related changes in cardiovascular homeostatic mechanisms, comorbid illness and (in particular) medications. The annual incidence of syncope in this age group is not known with certainty. Published figures may be underestimates as unwitnessed syncopal events are misreported as falls by elderly people with cognitive impairment.<sup>1</sup> A recurrence rate of 30% at two years has been reported.<sup>2</sup>

Not surprisingly, the consequences of syncope are more serious for older patients than for their younger counterparts. The mortality rate is higher (although this probably reflects a higher prevalence of coexisting heart disease) and they suffer more major injuries.<sup>3,4</sup> Falls in old age (with or without

loss of consciousness) are associated with psychological morbidity and are frequently cited in nursing home applications.<sup>5,6</sup> Whilst a single syncopal event in a young patient with no evidence of cardiac disease may not require investigation, in older individuals, the high morbidity coupled with the high recurrence rate mean that prompt assessment of all patients is warranted.

## Causes of Syncope

The mnemonic 'CORN' may assist in remembering some important causes of syncope:

- Cardiac
  - arrhythmia (e.g. sinus node disease)
  - outflow obstruction (e.g. aortic stenosis, hypertrophic obstructive cardiomyopathy (HOCM))
  - circulatory failure (e.g. pulmonary embolus)
- Orthostatic hypotension/postprandial hypotension
- Reflex syncope
  - vasovagal syncope (also called neurocardiogenic, vasodepressor)
  - carotid sinus syndrome
  - situational syncope (cough, micturition, defaecation) (associated with glossopharyngeal neuralgia)
  - glossopharyngeal syncope (associated with glossopharyngeal neuralgia)
- Neurological disease
  - vertebrobasilar TIA (other neurological symptoms/signs usually present)

subclavian steal  
 syndrome  
 basilar migraine (rare)

Conditions which may mimic syncope but which do not reduce cerebral perfusion include:

- Epilepsy
- Metabolic disorders (e.g. hypoglycaemia)
- Psychiatric disorders (said to be uncommon as a cause of syncope in elderly people—more research is needed)

### Why Syncope Often Remains Unexplained

Syncope is, by definition, intermittent and between attacks there may be no abnormal clinical findings. Thus, even in younger patients the cause of syncope may remain elusive. Indeed, studies in the 1980s reported that syncope remained unexplained in up to 40% of both young and elderly patients.<sup>3</sup>

It is often quoted that an accurate history tells all. In elderly patients, an accurate history is frequently not available. Syncopal events may, therefore, be misreported as falls and may evade appropriate investigation. Even if the history is accurate, diagnostic difficulty may arise as a result of atypical disease presentation in older individuals. For example, faints in elderly subjects may have many of the features of fits (including incontinence and slow recovery). The problem is often compounded by multiple pathology in this age group (some older patients do have both fits and faints; in others, symptoms result from the combined effect of more than one disease process).

Nonetheless, using a systematic approach to the investigation of syncope employing newer diagnostic tests (such as head-up tilt testing for vasovagal syncope), a diagnosis can be achieved in most older individuals.<sup>7</sup>

### Investigation of Syncope

Notwithstanding the comments above, the history and examination remain the most useful ‘investigations’.<sup>8</sup> We recommend the flow diagram shown in Figure 1

when investigating syncope (modified from Linzer (1997)<sup>8</sup>).

### Management of Syncope

The management of the cardiac and neurological disorders which may cause syncope are discussed in the relevant chapters of this book. (See the chapter on falls/instability by Close.)

#### *Vasovagal syncope*

The pathogenesis of this condition is not known. A number of therapeutic interventions have been used to treat recurrent vasovagal syncope but there have been few randomised controlled trials and even fewer looking specifically at older individuals. Cardiac pacing may be of benefit in some patients who have a profound bradycardia or asystole during tilt-induced syncope.<sup>9,10</sup>

#### *Carotid sinus syndrome*

This is an important but frequently overlooked cause of unexplained syncope. Patients with this syndrome have an abnormal response to carotid sinus massage which is either cardioinhibitory (>3 seconds asystole), vasodepressor (>50 mmHg systolic blood pressure fall) or mixed (both). Cardioinhibition is successfully treated with dual-chamber cardiac pacing whilst the treatment of vasodepression remains unsatisfactory.<sup>11,12</sup>

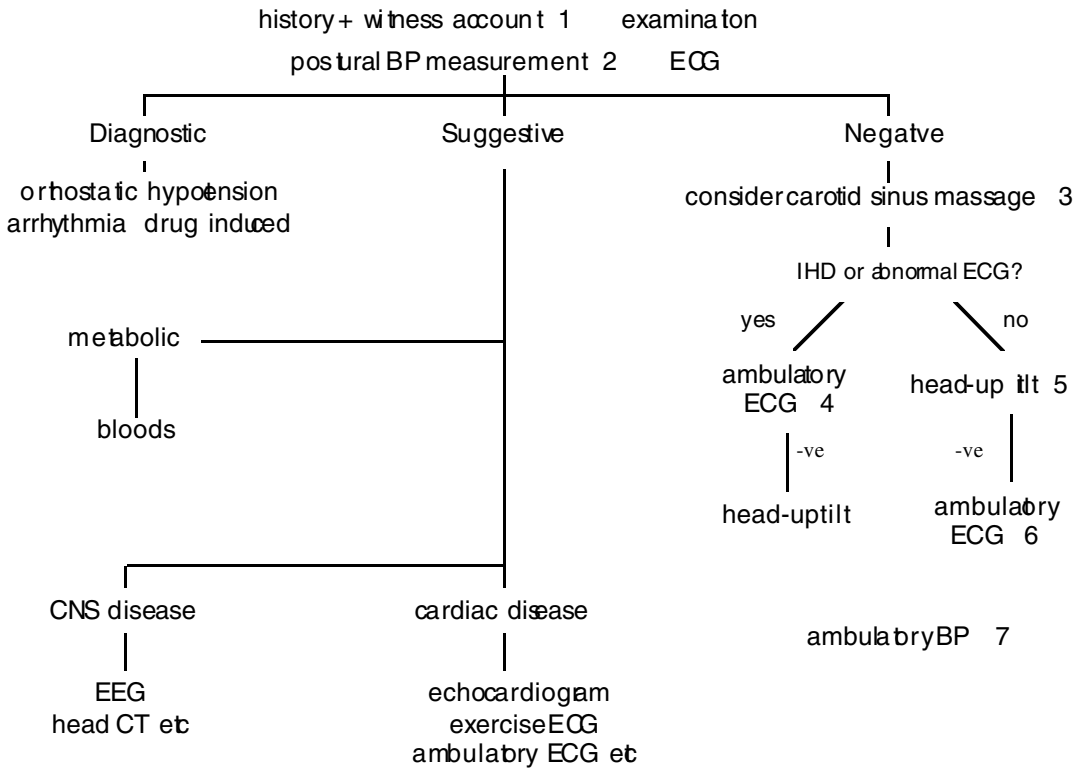
### Syncope and Driving

Remember to ask whether your patient drives a car! Patients who have had an unexplained syncopal event should not drive for 1 year. Driving may recommence once the cause of syncope has been identified and symptoms controlled.

### DIZZINESS

*There can be few physicians so dedicated to their art that they do not experience a slight decline in spirits on learning that their patient's complaint is of giddiness.*

W.B. Matthews, 1975<sup>14</sup>



Explanatory notes

- 1 Ascertain whether the event was witnessed and try to contact the witness. Ask about the circumstances of the event (lying, sitting or standing?), any prodrome (dizziness or aura?), the speed of recovery and any associated symptoms (particularly neurological symptoms).
- 2 Measurements are taken after 15 minutes supine rest, immediately after standing and at 1 and 2 minutes. Postural blood pressure measurements can vary from day to day and may need to be repeated—they tend to be greatest in the morning. Beat to beat blood pressure monitoring will detect transient blood pressure drops which may, otherwise, be missed.
- 3 Recognised contraindications to carotid sinus massage should be observed. The diagnostic yield of this test is increased by repeating massage during head-up tilt.<sup>13</sup>
- 4 Electrophysiological studies are occasionally undertaken if an arrhythmia is strongly suspected.
- 5 Patients are tilted at 60–80° for 45 minutes whilst heart rate and blood pressure are monitored. Glyceryl trinitrate or isoprenaline can be used to increase the sensitivity of the test.<sup>9</sup>
- 6 A loop recorder may detect an arrhythmia if symptoms are frequent.
- 7 If symptoms occur at mealtimes, ambulatory blood pressure monitoring may document postprandial dips.

Figure 1. Algorithm for diagnosing syncope.

The Scope of the Problem

The prevalence of dizziness increases with age. In the USA it is the most common cause of primary care consultations for patients aged over 75 years.<sup>15</sup> Indeed, most dizzy patients are managed by their

general practitioners.<sup>16</sup> Many patients with dizziness additionally experience syncopal events or falls (with their attendant complications).<sup>17</sup> Older individuals are more likely to have chronic dizziness and this is associated with psychological morbidity.<sup>18</sup>

### Why it Can be Difficult to Make a Diagnosis

Faced with a dizzy patient, the problems are usually twofold:

1. The patient has difficulty describing the symptom.
2. The list of differential diagnoses is depressingly long.

The solutions are:

1. Try to establish whether the patient has:
  - a) presyncope This is feeling of an impending faint often associated with pallor and relieved by sitting down. This suggests cerebral hypoperfusion due to hypotension, i.e. a cardiovascular cause (or, in the acute setting, blood loss).
  - b) vertigo This is an illusion of movement (usually rotation—the word vertigo comes from the Latin *vere* meaning to turn). It suggests a lesion in the vestibulolabyrinthine system anywhere between the ear (peripheral vertigo) and the central vestibular pathways (central vertigo). It occurs when there is an asymmetry in the input from the two sides.
  - c) dysequilibrium This is a feeling of unsteadiness when upright. It suggests abnormal sensory input (visual, vestibular or proprioceptive) or central processing. The causes are those of a gait disorder.

Of course, many elderly patients will have more than one type of dizziness due to multiple pathology. Indeed, Drachman and Hart described a multi-sensory dizziness syndrome in which dizziness is due to the combined effect of impairments in a number of systems.<sup>19</sup> Moreover, patients with central vertigo and uncompensated peripheral vertigo (a common scenario in elderly patients in whom compensatory mechanisms are often impaired) tend to experience dysequilibrium rather than vertigo.

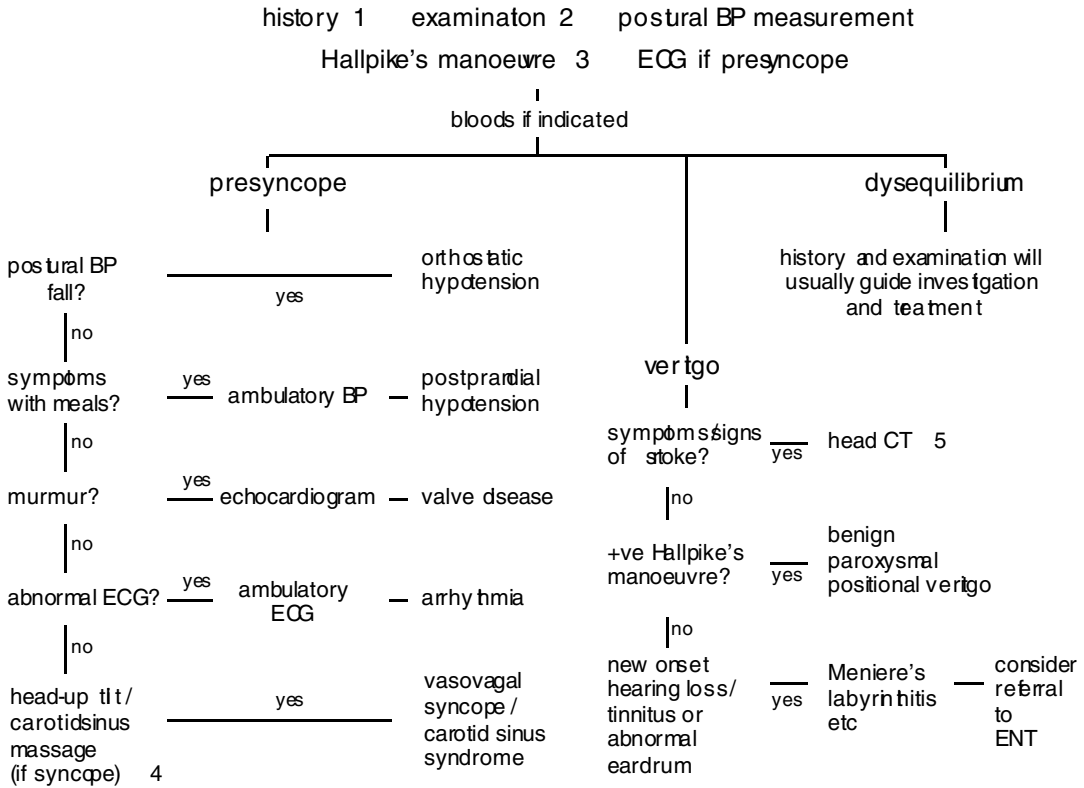
2. Having identified the type of dizziness, the potential causes should be easier to remember!

### Causes of Dizziness

- Causes of presyncope are similar to those of syncope:
  - cardiac
  - orthostatic hypotension/postprandial hypotension
  - causes of reflex syncope
- Causes of vertigo include:
  - benign paroxysmal positional vertigo (common)
  - Ménière's disease (usually presents at a younger age)
  - infections
    - viral labyrinthitis
    - Ramsay-Hunt syndrome
    - chronic middle ear disease
    - otitis externa (especially in patients with diabetes mellitus)
  - tumour
    - cholesteatoma with fistula
  - trauma
    - cerebrovascular disease (infarction/haemorrhage of the labyrinth, brainstem or cerebellum or vertebrobasilar ischaemia. The latter rarely causes vertigo without other neurological symptoms. It is not clear whether cervical spondylosis causes vertebrobasilar ischaemia<sup>20</sup>)
- Causes of dysequilibrium include:
  - peripheral neuropathy
  - cervical myelopathy
  - bilateral vestibular loss (e.g. with aminoglycosides)
  - visual impairment
  - basal ganglion disorders
  - cerebellar disorders
  - cerebrovascular disease (including small vessel disease)

Remember that medications can cause all subtypes of dizziness. There are a couple of other causes of dizziness which do not fit into the above scheme:

- General medical
  - Including anaemia, polycythaemia, hyperviscosity syndromes, hyper or hypoglycaemia, thyroid disease and chronic renal failure. Also consider carbon monoxide poisoning and alcohol.
- Psychiatric
  - Again, more common in younger individuals.<sup>15</sup> Hyperventilation can, occasionally, cause syncope.



Explanatory notes

- 1 If the patient describes vertigo, ask about associated symptoms (tinnitus or deafness suggest a lesion in the ear). Also ask about the duration of symptoms (benign paroxysmal positional vertigo lasts seconds, transient ischaemic attacks minutes and Ménière's hours).  
If the patient describes dysequilibrium, ask whether this is worse with the eyes closed (or in the dark). If so, this suggests proprioceptive or bilateral vestibular problem (which vision is compensating for) rather than a problem with central processing.
- 2 Include thorough examinations of the cardiovascular and neurological systems, assess gait, perform Romberg's test and record visual acuity. Also examine the ears and hearing and look for nystagmus (patients with peripheral and central vertigo have different types). Consider voluntary hyperventilation if the history is suggestive.
- 3 This is a test for benign paroxysmal positional vertigo and involves moving the patient from the sitting to the so-called head hanging position whilst looking for characteristic symptoms and signs. The test is repeated on right and left sides.<sup>22</sup>
- 4 Head-up tilt is less likely to be positive with presyncope than with syncope.<sup>23</sup> Carotid sinus massage should only be performed if the patient additionally has syncope since dizziness is not an indication for pacing.
- 5 Request an urgent CT if you suspect cerebellar haemorrhage.

Figure 2. Algorithm for diagnosing dizziness.

Investigation of Dizziness

A thorough clinical evaluation will identify the cause (or causes) of dizziness in most elderly patients and will guide further investigation.<sup>21</sup> We use the flow diagram shown in Figure 2 when investigating dizziness.

Management of Dizziness

The management of presyncope is as for syncope. The treatment of dysequilibrium and gait disorders is covered elsewhere in this book. There are specific treatments for certain causes of vertigo such as Ménière's disease and benign paroxysmal

positional vertigo (discussed below).<sup>24</sup> In patients with peripheral vertigo, antiemetics and vestibular sedatives may be required in the short term to control symptoms. These should not be continued for long as they impair the compensation process. Exercise programmes such as that devised by Cawthorne and Cooksey in 1945 may aid compensation. The management of central vertigo requires further research. Psychological problems may need to be addressed.<sup>24</sup>

### *Benign paroxysmal positional vertigo*

This may follow head injury but is often idiopathic. Patients with this condition experience transient severe vertigo with certain head movements, e.g. turning in bed and looking up ('top shelf vertigo'). It is believed that debris in the posterior semicircular canal causes displacement of the cupula during these head movements. The condition can be successfully treated with the Epley manoeuvre which disperses the debris.<sup>25</sup>

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**SELF-ASSESSMENT QUESTIONS**

Which of the following statements are true?

1. Vertebrobasilar ischaemia often causes isolated vertigo.
2. Benign paroxysmal vertigo is amenable to treatment.
3. Epilepsy is a common cause of syncope.
4. Patients with unexplained syncope should not drive for 2 years.





# 16. Gait disorders in the elderly

Simon D. Lee and Jim George

## INTRODUCTION

Assessment of gait, defined as manner or style of walking, in the elderly patient should be an integral and essential part of the geriatrician's examination routine. Gait disorders contribute to the common clinical presentation of elderly people, for example immobility, falls and fracture of neck of femur, and may result from pathologies which are more common in old people such as cerebrovascular disease, Parkinson's disease, dementia and osteoarthritis. Impairment of mobility is common in old people with a prevalence of 9–42% in the community, 50–65% in nursing homes and 40–65% in hospital populations.<sup>1</sup>

## GAIT CHANGES WITH AGEING

Two major changes in the gait of healthy old people have been demonstrated<sup>2</sup>:

1. Slowing of gait with reduction of stride length
2. Postural instability with increased sway while standing still and deviation from a straight line when walking.

However, in the past these gait changes with old age have probably been exaggerated as it is difficult to rule out subclinical disease in the very elderly.

## CLINICAL EXAMINATION OF GAIT

The gait may be the only abnormality present on clinical examination and it may lead you to the correct clinical diagnosis by encouraging you to look for the appropriate clinical association on the rest of the examination. Ask the patient to walk and

observe for symmetry, size of the paces, posture, arm swing, distance between the feet, movement of the knees, pelvis and shoulders. If possible, ask the patient to walk as if on a tightrope (tandem gait) to test for a mild degree of ataxia. Finally, ask the patient to stand with his feet together and then close his eyes (Romberg's test). In a positive Romberg's test the subject is able to stand with eyes open but falls with eyes closed and it indicates a loss of joint position sense. Finally, examine footwear for comfort and suitability, including the soles for abnormal wear, and examine any walking aids for length and condition.<sup>3</sup>

For adequate examination of gait the clinician needs adequate space, ideally at least five metres. Assessment of gait should be multidisciplinary and involve the physiotherapist and occupational therapist. The Day Hospital may be an ideal environment rather than a busy medical outpatients department. Gait disorders in the elderly may be classified into high-, middle- and low-level gait disorders (Table 1).

**Table 1.** Clinical classification of gait disorders.<sup>4</sup>

High level	Cautious gait Dysequilibrium gait Isolated gait ignition Frontal gait disorder	
Medium level	Spastic gait Hemiparetic gait Parkinsonian gait Choreiform gait	
Low level	Peripheral motor	– arthritic – myopathic – neuropathic
	Peripheral sensory	– sensory ataxia – visual ataxia

## HIGH-LEVEL GAIT DISORDERS IN THE ELDERLY

Many of the gait disturbances found in elderly people, and in those with dementia, cannot be attributed to classical neurological disease or to normal ageing. Description of such gait disorders include 'marche à petit pas', gait apraxia and senile gait. Nutt *et al.* (1993) describe a clinical classification of gait disorders.<sup>4</sup> Cautious gait is described as a wide-based gait with a markedly shortened stride but maintenance of balance. Disequilibrium syndrome is associated with severe disturbance of balance. Isolated gait ignition failure is characterised by severe start/turn hesitation and freezing, but without other features of Parkinson's disease and an otherwise normal gait. Frontal gait disorder contains features of the other gait disorders in combination, including hesitation and freezing with poor balance and sometimes a wide base with a shortened stride. Higher-level gait disorders and their possible causes are summarised in Table 2. The term 'senile gait disorder' is not recommended as it is not descriptive and suggests the cause is invariably idiopathic.

## MIDDLE-LEVEL GAIT DISORDERS

At the middle level, the central nervous system selects the postural and locomotor responses but the execution is faulty. Middle-level gait disorders include hemiplegic gait with circumduction of the leg and hip adduction, and Parkinsonian gait with small shuffling steps, hesitation, festination and absent arm swing. Cerebellar ataxic gait is characterised by a wide base, increased sway and tendency to fall, particularly on turning.

## LOW-LEVEL GAIT DISORDERS

Loss of proprioception leads to a sensory ataxic gait. Proximal myopathies may lead to a 'waddling' gait. 'Foot drop' leads to exaggerated hip flexion and lifting of the foot (high steppage gait) followed by 'foot slap'. Various arthropathies and foot disorders can cause abnormal gait due to difficulties with weight-bearing, or due to a limited range of movement of the joints.

## FUNCTIONAL ASSESSMENT OF GAIT

Geriatric assessment is not just about detecting disease, but also should encompass assessment of function as a basis for rehabilitation. Tinetti (1986) explains that limiting the assessment of mobility problems to the standard physical examination and paraclinical tests is inadequate in the elderly.<sup>5</sup> Gait disorders are often due to multiple aetiologies. There is often a poor relationship between clinical signs and resulting function. It is functional impairment which is more likely to predict falls and mobility problems.<sup>6</sup> A good test of gait function should be relevant, sensible, sensitive and valid.<sup>7</sup> In this section we will limit discussion to tests which fulfil these criteria (Table 3). Macknight and Rockwood (1995) give an excellent review of gait and mobility scales.<sup>1</sup> Most of the tests described require no special equipment and are suitable as outcome measures in research or audit projects.

## BALANCE AND MOBILITY SCALES

In 1986 Tinetti developed a performance-orientated mobility assessment (POMA) intended for assessing older adults and in particular to predict falls. It was developed as an objective and standardised assessment and to be the 'clinical equivalent of a gait and balance laboratory'. It includes simple tests of balance, including standing on one leg, as well as observation of gait. Each item is scored on an ordinal scale and summed to give a total of 24 or 40 depending on the version used.

The functional ambulation classification is a gait measure originally developed in Boston but used in the UK, particularly for stroke patients. It is a simple 0–5 scale with 0 as nonambulant and 5 as independently mobile. A more sophisticated scale which is more discriminative is the Rivermead Mobility Index.<sup>7</sup> This concentrates on activities that are considered likely to be undertaken by most people if they possibly can. These range from being able to turn over in bed at one extreme and fast walk or run ten metres at the other extreme. A specific Elderly Mobility Scale (EMS) has been devised which is particularly used by physiotherapists. The scale correlates well with the Barthel disability scale, but has poor predictive validity for discharge destination.<sup>8</sup>

**Table 2.** High-level gait disorders in the elderly.<sup>4</sup>

Clinical Classifications	Previous Terms	Characteristics				Lesion
		Dysequilibrium	Hesitancy	Wide base	Short steps & Freezing	
Cautious	Elderly gait Senile gait	–	–	+	+	Very non-specific Can be central nervous system or peripheral nervous system
Dysequilibrium	Tottering Gait apraxia Frontal ataxia	++	+/-	+/-	+/-	Midbrain Basal ganglia Frontal lobe
Isolated gait initiation disorder	Gait apraxia	–	++	–	–	Frontal lobe and basal ganglia
Frontal gait disorder	Marche à petits pas Magnetic gait apraxia Lower half Parkinsonism	–	++	–	+	Frontal lobe

**Table 3.** ‘Best buy’ tests of mobility in the elderly.

- Elderly Mobility Scale
- Timed Walk
- ‘Get up and Go’ Test
- Rivermead Visual Gait Analysis

the bedside and demonstrates the subject’s balance, gait, speed and functional ability. A simple refinement is to time the test and the timed ‘up and go’ test is a good predictor of falls in the community.<sup>9</sup>

### TIMED WALK

Simple measurement of time taken to walk, for example, ten metres at normal speed, using a walking aid if necessary, has been widely used in studies of frailty, falls, medical treatment and rehabilitation.<sup>1</sup> This simple test correlates well with balance, limb power, fear of falling, stroke outcomes and general health.

### ‘GET UP AND GO’ TEST

The ‘Get up and Go’ test was originally developed in an English gait laboratory and refined in a Canadian geriatric day hospital.<sup>1</sup> The test involves the subject rising from a chair, walking a distance of three metres, walking back to the chair and sitting down again. This simple test can be used at

### GAIT QUALITY

A criticism of the previous scales is that they do not attempt to measure gait quality. They tend to measure merely the ability to get from A to B rather than quality of gait. A poor quality gait may be unsafe or lead to arthritis and may cause embarrassment to the elderly person. Physiotherapists particularly will strive to achieve as normal a gait as possible for the elderly person in rehabilitation, not just a purely functional gait. The Rivermead Visual Gait Assessment (RVGA) is a simple four-point gait assessment scale which measures gait quality and is suitable for clinical use.<sup>10</sup>

### LABORATORY-BASED GAIT ANALYSIS

There are many sophisticated ways of assessing gait using special walkways and video analysis to

measure stride length and speed, including EMG analysis. However, these methods have limited clinical application.<sup>7</sup>

## TREATMENT AND REHABILITATION OF GAIT DISORDERS IN THE ELDERLY

Roughly one-quarter of gait disorders presenting in the elderly are thought to be treatable.<sup>11</sup> This includes previously unrecognised Parkinson's disease, metabolic disturbances, intracranial tumours, normal pressure hydrocephalus, myelopathy due to compression, inflammatory polyneuropathy, drug-related gait disorders and depression. Most of the information on treatment and rehabilitation of gait disorders in the elderly is from retrospective case studies and there are few controlled prospective studies and no randomised studies. Positive outcomes with treatment, however, are reported with a large number of conditions (Table 4). Surgery for compressive cervical myelopathy and lumbar stenosis may improve the gait in the individual patient. Similarly, shunting can improve the gait in normal pressure hydrocephalus, but this improvement may only be maintained in 5–20% of patients. Targeted exercise regimes aimed at strengthening leg muscles, improving joint flexibility and balance training have been shown to significantly improve gait and balance in frail elderly.<sup>12</sup> It is also helpful to take a more pragmatic approach and advise on appropriate footwear and the use of suitable walking aids and environmental

**Table 4.** Potentially treatable gait disorders in old age.<sup>11</sup>

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B12 deficiency
Folate deficiency
Hyperthyroidism, hypothyroidism
Parkinson's disease
Cervical myelopathy
Normal pressure hydrocephalus
Subdural haematoma
Brain tumours
Osteoarthritis
Rheumatoid arthritis
Stroke
Peripheral neuropathy
Proximal myopathy, particularly due to osteomalacia
Drugs, e.g. major tranquillisers and hypnotics

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modification in order to prevent falls. Footwear should be non-slip with minimal heel lift. Use of a walking stick in the contralateral hand may help in relieving ipsilateral hip pain or, alternatively, using a walking stick in the ipsilateral hand may sometimes reduce the force action on the hip.

## RESEARCH IN GAIT FOR THE SPECIALIST REGISTRAR

*'Choose something common and you will find little is known about it.'*

H. Head.

The clinical assessment of gait is still very subjective, but sophisticated laboratory gait analysis, although objective, has not yet found a role in clinical practice. Further research is needed to refine our clinical assessment and to investigate further the community prevalence of gait disorders and their relationship to disease and the value of rehabilitation in improving outcomes, including falls and hospitalisation.

## CONCLUSION

The trainee should be able to:

1. Perform a clinical and functional assessment of gait.
2. Recognise common abnormalities of gait in the elderly and identify the probable cause, e.g. Parkinson's disease, frontal gait disorder.
3. Be aware of physiotherapy techniques for treatment of gait disorders and how improvement can be measured.

Assessment of gait in the elderly, as with the overall assessment, should be functional as well as purely clinical and should provide the basis for successful rehabilitation. Gait assessment in the elderly, therefore, incorporates the basic principles of good geriatric practice.

## KEY POINTS

1. Abnormal gait is not a feature of normal ageing and may be a predictor for falls.
2. Roughly one-quarter of gait disturbances in the elderly are treatable.

3. Gait can be assessed using simple clinical tests. Sophisticated gait analysis in the laboratory is mainly a research tool.
4. The 'get up and go test' and 'timed gait' are useful tests for the elderly.
5. More research is needed to identify the prevalence of gait problems of community elderly and to evaluate physiotherapy treatments.

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## SELF-ASSESSMENT QUESTIONS

True or False?

1. Parkinson's disease classically causes a high-level gait disorder.
2. Senile gait disorder is an accepted clinical entity.
3. Gait apraxia is associated with normal leg movement and power.
4. Foot drop causes a medium-level gait disorder.
5. Computerised gait analysis is superior to clinical assessment in detecting treatable gait disorders.



# 17. When to treat hypertension?

## When the benefits outweigh the risks

**Nigel S. Beckett and Christopher J. Bulpitt**

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There is overwhelming evidence for the benefits of treating elderly hypertensive patients. Trials such as the Coope and Warrender trial (C+W), the European Working Party on Hypertension in the Elderly (EWPHE) trial, the Swedish Trial of Older People with Hypertension (STOP-H), the Systolic Hypertension in the Elderly Programme (SHEP) trial and the Systolic hypertension in Europe trial (Syst-Eur) all show that treating elderly patients who are hypertensive reduces the chance of them having a stroke. So do we simply have to make sure of a diagnosis of sustained hypertension, agree on a level of blood pressure as ‘hypertensive’, and then start low-dose diuretics, followed if required by second line treatment? Perhaps not.

Elderly people, by whatever criteria we use (age of retirement, over 70 etc.), are a heterogeneous group. There is very good evidence for treating hypertension in the fit elderly person up to the age of 80. However, many doctors may not treat the 74-year-old lady in a nursing home who has had two strokes, is often incontinent of urine and has marked cognitive impairment secondary to vascular dementia. These cases are extremes of a spectrum, but where is the dividing line? What criteria should we use—the level of blood pressure, the overall risk to the patient, chronological age or biological age? Is it fair to say, “when the benefits outweigh the risks?” What evidence do we have to help with the question, “when should we treat hypertension in older people?”

### LEVEL OF BLOOD PRESSURE

Below the age of 75, there is a positive linear relationship between the relative risk of both stroke

and coronary heart disease (CHD) and increasing diastolic blood pressure over the range of about 76 to 105 mmHg. The relative risk of stroke between the highest (110 mmHg) and lowest (69 mmHg) is between 10 and 12 times, while the corresponding value for CHD is about 4 times. Lowering the casual diastolic blood pressure by only 7.5 mmHg is associated with a 46% decrease in the risk of stroke and a 29% decrease in the risk of CHD. If the relationships between risk and blood pressure are assumed to be linear, this equates in round figures to a reduction in risk of 6% for stroke and 4% for CHD for each one mmHg decrease in diastolic blood pressure. However, most of these data are based on the study of men, while the geriatrician, as a consequence of the demographic differences in sex, sees more women than men. Although there would seem to be no reason to expect a different form of relationship between risk and casual diastolic blood pressure in women, the absolute values may vary. Indeed, studies of women have shown that they tolerate hypertension better than men and have lower coronary mortality rates with any level of hypertension.

Treatment decisions must not be based solely on diastolic pressure. Systolic pressure is proving a better predictor of morbidity and mortality. The prevalence of isolated systolic hypertension (ISH) increases with increasing age, which reflects the increasing rigidity of the arterial tree and atherosclerotic changes. In the Framingham population, 65–75% of hypertension in the elderly population is of the isolated systolic type.

There is good evidence for benefit from large well-designed intervention trials. A meta-analysis by Amery *et al.* (1990) suggested that stroke events in the trials in older people were reduced by an average of 40%. Moreover, there is a strong consistency of



results in the trials with percentage reductions in stroke events ranging from 25–47%. The benefits for treatment have also been shown for ISH. The SHEP trial showed a 36% reduction in stroke events, a 27% reduction in cardiac events and a 32% reduction in all cardiovascular events. The absolute benefit was such that treating 33 patients for 5 years would prevent one event. In the Syst-Eur trial, active treatment reduced stroke events by 42% and the incidence of all cardiovascular complications by 31%. In absolute terms, treating 34 patients for 5 years would prevent one stroke and treating 19 patients for 5 years would prevent one major cardiovascular event.

When one considers the level of blood pressure (BP) at entry for the various trials, the evidence supports treatment for systolic BP equal to or above 160 mmHg and diastolic above 90 mmHg (Table 1). But what should we do for pressures between 140 and 159 mmHg systolic? The sixth Joint National Committee in the USA defines ISH as a systolic above 140 mmHg with a diastolic below 90 mmHg. To date, there is no good evidence for making treatment decisions based on these levels alone. A trial looking at treating this level of blood pressure is currently under way.

Most epidemiological data have been based on the brachial artery blood pressure, although logically it is the pressure at the point of potential arterial disease (e.g. the aortic root or carotid arteries) that is relevant. This may not be a practical problem unless there is a plausible reason to expect a disproportional central-peripheral pressure augmentation, or if a particular intervention is

claimed to preferentially alter central pressure.

With regard to the level of blood pressure, a confounding factor in future studies is likely to be the means of determining brachial blood pressure. The advent of automated blood pressure recording devices and ambulatory monitoring, with the phasing out of mercury sphygmomanometers for health and safety reasons, will require a number of assumptions about the equivalence of historical blood pressure data with values measured by newer techniques. Indeed, the recently published Hypertension Optimal Treatment (HOT) study used automated oscillometric measurement of brachial blood pressure.

## AGE

One of the biggest risks of stroke, whether or not it is related to hypertension, is increasing age. Does this mean we should treat patients of all ages? One might argue that as the absolute risk in elderly people makes them a high-risk group purely from their age, as a group they would all benefit. However, the epidemiological data for the over-80s suggest that those with a higher blood pressure live longer. To date, very few patients over 80 have been recruited into intervention trials to evaluate clearly the benefits and risks of treatment (Table 2). A recent meta-analysis of patients over 80 recruited to intervention trials over the past 15 years did show a benefit in reduction in stroke events, major cardiovascular events and incidence of cardiac failure. However, there was an increase in mortality

**Table 1.** Level of blood pressure at entry and achieved blood pressure on active treatment in 6 major intervention trials in elderly subjects. (SBP = systolic blood pressure, DBP = diastolic blood pressure, Rx = treatment).

	C+W	EWPHE	STOP	MRC	SHEP	Syst-Eur
SBP criteria for entry	>170	160–239	180–230	160–209	160–219	160–219
DBP criteria for entry	>105	90–119	90–120	<115	<90	<95
BP at entry	196/99	182/101	195/102	185/91	170/77	174/85
BP obtained on active Rx	162/78	149/85	167/87	152/79	144/68	151/78

C+W = Coepe and Warrender trial

EWPHE = European Working Party on Hypertension in the Elderly

STOP = Swedish Trial of Older People with Hypertension

MRC = Medical Research Council

SHEP = Systolic Hypertension in the Elderly Programme

Syst-Eur = Systolic Hypertension in Europe Trial.

**Table 2.** Results of six major trials with patients over 80 years of age.

C+W	EWPHE	MRC	STOP-H	SHEP	Syst-Eur
No patients over 80	No benefit (155 patients over 80)	No patients over 80	No benefit (269 patients over 80)	Reduction of non-fatal stroke events Fatal events not reduced	Reduction of non-fatal stroke events Fatal events not reduced

C+W = Coope and Warrender Trial

EWPHE = European Working Party on Hypertension in the elderly trial

MRC= Medical Research Council

STOP-H = Swedish Trial of Older People with Hypertension

SHEP = Systolic Hypertension in the Elderly Programme

Syst-Eur = Systolic Hypertension in Europe Trial.

of around 14%, suggesting that there may be a trade-off between benefit and risk when treating the over-80s. The Hypertension in the Very Elderly Trial (HYVET) which started in 2000 has been designed to address this issue.

As to assessing biological age, this is a minefield. What indices would be used—skin elasticity, presence of arcus, baldness etc.? These have been examined but to date there has been no well-devised or validated system able to assess the biological age of an individual. The most interesting so far has been the assessment of arterial compliance, iterating the suggestion that a ‘man is as old as his arteries’.

## OVERALL RISK

Can we make some assessment based on co-morbidity and the overall risk, taking into account an individual’s risk profile? Older people, by the fact of their age, put themselves in a high-risk group. Additional factors—such as target organ damage, presence of diabetes mellitus, left ventricular hypertrophy and hypercholesterolaemia—will increase the risk to an individual and should increase the pressure to start treatment and to aim for a lower blood pressure. The coronary risk prediction chart published with the latest British Hypertension Society guidelines for the treatment of hypertension only go up to 74 years of age.

Older patients recruited to intervention trials tend to be fit. They smoke less, have a lower prevalence of CHD and diabetes mellitus and are less likely to have had a stroke than hypertensive subjects in general community surveys. It can be argued, however, that

the elderly people at home are at a greater risk, as they have a greater prevalence of risk factors and thus would gain more benefit from treatment. Equally, the greater prevalence of co-morbidity might make them more susceptible to side effects. In intervention trials in elderly hypertensive patients, the absolute benefit in terms of reduction in stroke is proportional to the risk of a stroke, despite the fact that the relative risk reduction is constant across the trials and reduces in old age. The greater the risk of a stroke in the placebo group, the greater the absolute benefit from active treatment. However, it is likely that at some stage the benefit is lost due to co-morbidity resulting in death before any benefit. Where that line is crossed is uncertain.

One has to use common sense when discussing the risk to benefit ratio. Even if the benefits and risks are measured in the same units (e.g. events/1000 patient years) the events are unlikely to be of the same severity. In EWPHE, for example, there were an additional 4 episodes of gout/1000 patient years of treatment but a reduction in non-fatal cerebrovascular events by 11/1000 patient years. We cannot simply divide the benefit by the risk in this case. There may also be potential benefits that are less easy to quantify. There is a suggestion from the Syst-Eur trial that the incidence of dementia is reduced by anti-hypertensive treatment.

## WHEN TO TREAT?

In conclusion, there is much evidence that we should treat the fit elderly hypertensive subject with systolic pressures over 160 mmHg alone or in combination

with diastolic pressures over 90 mmHg, and that the benefits far outweigh the risks up to the age of 80. For individuals over 80 there is no evidence for starting treatment, although it is perhaps advisable to treat systolic pressures over 200 mmHg or diastolic pressures above 110 mmHg.

There is still the proviso that the standing systolic blood pressure should be at least 140 mmHg. Patients with severe orthostatic hypotension may not welcome anti-hypertensive treatment. For those with mild ISH (systolic pressures between 140 and 159 mmHg) further evidence is needed. As for the elderly patient with several co-morbidities, the clinician needs to make an informed sensible assessment of the risks and benefits. In the very frail elderly person, more evidence is required on the benefit or otherwise of treatment before we can decide what to do.

### KEY POINTS

- There is very good evidence of benefit for treating a fit elderly person up to the age of 80.
- Systolic pressure is a better indicator of morbidity and mortality.
- There is benefit for treating systolic pressures 160 mmHg or more but lack of evidence for systolic pressures 140–159 mmHg.
- The benefit for treating the over-80s is unclear.
- In elderly people with several co-morbidities, we need to consider benefits and risks.
- For frail elderly people with hypertension, more evidence is required on the value of drugs for hypertension.

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### SELF-ASSESSMENT QUESTIONS

1. Which of the following are true?
  - a) Cardiovascular risk is the same as coronary heart disease risk.
  - b) Diastolic blood pressure increases linearly with age in men.
  - c) In the over-70s casual systolic blood pressure is higher in men than women.
  - d) The effect of sodium restriction on blood pressure increases with increasing age.
  - e) Systolic blood pressure is a better predictor of events than diastolic pressure in elderly subjects.
2. In the major intervention trials in elderly hypertensives:
  - a) Total mortality was usually significantly reduced.
  - b) Cardiac mortality was usually reduced.
  - c) Stroke events were usually reduced by at least 35%.
  - d) The relative reduction in stroke events increases with the increase in the stroke event rate in the placebo group.
  - e) The average reduction in systolic and diastolic blood pressures with treatment is similar.
3. The following are true about the over-80s:
  - a) High blood pressure is associated with longer survival.
  - b) There are data to suggest that treatment with anti-hypertensives might increase mortality.
  - c) The risk to benefit ratio from treatment of hypertension is well known.
  - d) By 2020 they will make up more than 10% of the general population of many European countries.
  - e) The prevalence of a casual recording of systolic blood pressure of greater than 159 mmHg is about 50% in women over 80.

# 18. Abdominal aortic aneurysms

David Berridge

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*50% of octogenarians with abdominal aortic aneurysms will die from rupture.*

O'Donnell *et al.*, 1976

## INCIDENCE

Abdominal aortic aneurysms are a common cause of sudden death in old age. In an unselected population of men over the age of 60 years, about 1.5% will have an aneurysm of the abdominal aorta on ultrasound screening. In selected groups (those with a history of hypertension, coronary, cerebral or peripheral vascular disease), men over 60 will have an incidence of 7–8%. Women have a much lower incidence: approximately 1–2% in similarly selected groups. Most (95%) abdominal aortic aneurysms are infra-renal in origin and hence can be considered for both endovascular and open repair. By contrast, those with a supra-renal aortic aneurysm will be unsuitable for any current endovascular device, with open surgery carrying a higher morbidity and mortality than infra-renal surgery. In the elderly patient (>75 years) with a supra-renal aneurysm, it may be wise to monitor with serial ultrasound scans at six-monthly intervals with aneurysms of less than 6 cm diameter.

It is important to detect aneurysms early, as they will be asymptomatic until the time of rupture in most individuals. A rapid ultrasound scan should be performed in the higher-risk groups mentioned above, in addition to those patients with any history of distal emboli (including 'blue toe syndrome'), sudden hypotension/collapse/back pain and even loin pain as an aneurysm may masquerade as either a ureteric/renal calculus or a urinary tract infection.

## EXAMINATION AND INVESTIGATION

Clinical exclusion of the presence of an abdominal aortic aneurysm is notoriously unreliable. Whilst a 5–6 cm diameter abdominal aortic aneurysm should be readily palpable in a slim or medium-build patient, it could easily be overlooked in even moderately obese patients. A high index of suspicion and a low threshold for performing ultrasound screening in high-risk groups, and in any cases of unexplained unproven abdominal or back pain, will allow an accurate aortic diameter to be recorded.

Although the UK Small Aneurysm Trial recommended surveillance for aneurysms <5.5 cm diameter, there was a survival advantage in the subgroup 4.9–5.5 cm diameter. All patients with aneurysms less than 5.5 cm diameter should undergo serial 6-monthly ultrasound scans—providing they remain asymptomatic. Any development of symptoms, increase in diameter of >0.5 cm in a 6-month period, or progressive increase up to and beyond 5 cm diameter should initiate detailed assessment and consideration of elective repair (although some authors continue to monitor aneurysms until they reach >6 cm diameter).

## IS IT WORTH DOING, DOCTOR?

Age itself should not be a bar to considering the merits of elective intervention for abdominal aortic aneurysms—It is *biological age* that matters, not *chronological age*!

This question may arise, particularly in very elderly subjects. It may be because the patients are anxious as to whether they will survive the procedure, or if they will be left with further morbidity on top of any existing limitations. All such discussions should include the patient's next of kin,

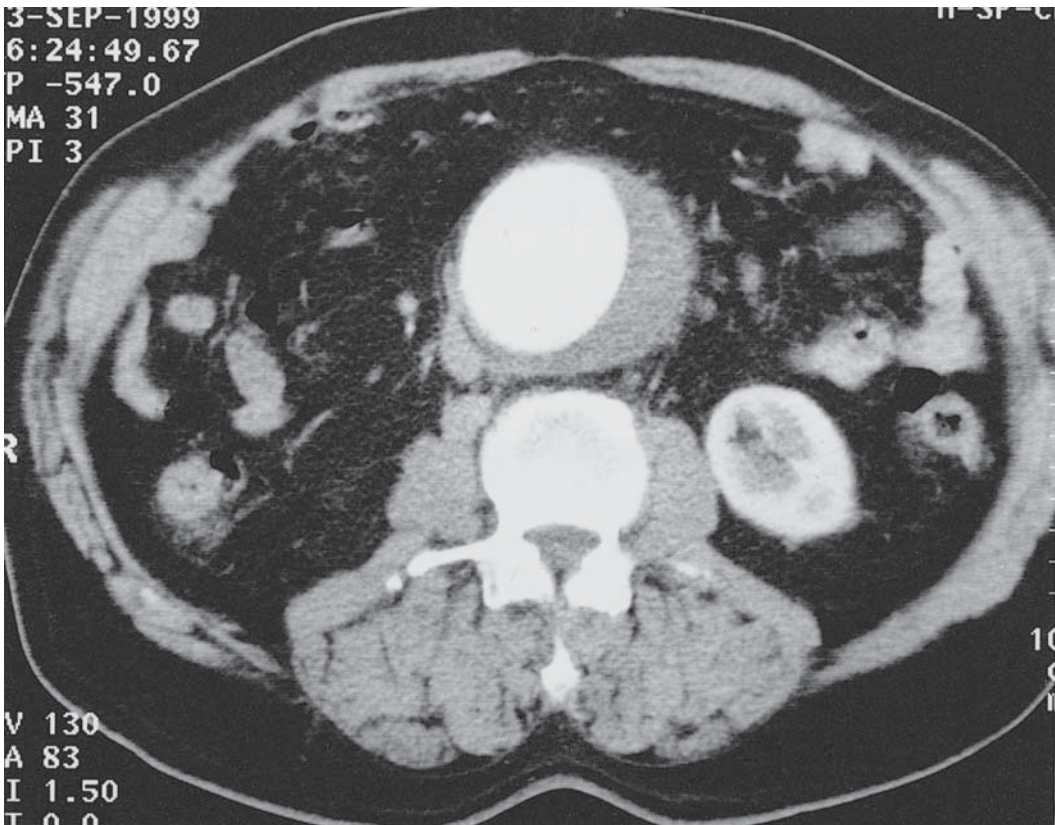
and must take into account the patient's current medical status, including detailed investigation of pre-existing coronary, respiratory, diabetic renal and neurological conditions. A realistic prognosis is needed from their elderly care specialist in addition to any other specialists involved with their care. The discussion for very large aneurysms (e.g. 8 cm diameter) in the presence of multiple uncorrectable co-existing medical conditions should also include the consideration of emergency surgery in the case of rupture. If the patient and their partner/relative indicate that they would wish emergency surgery to be performed, then the risks for elective surgery, although high, will be much more favourable than emergency surgery and should therefore be reconsidered.

Asymptomatic aneurysms presenting at 8 or even 10 cm diameter (Figure 1) need urgent repair as rupture is almost inevitable. These patients should remain in hospital and be operated on in the next elective list.

## OPEN VERSUS ENDOVASCULAR REPAIR

Early results of endovascular repair show encouraging early results—long-term results are not available. Lower cardiorespiratory complications can be achieved with endovascular repair, which should be considered in those patients with marked cardiorespiratory compromise—though conversion to open repair is associated with a high morbidity and mortality. Clearly, those patients who are severely compromised should not be subjected to a procedure designed to prevent future potential rupture, as the risk of intervention may equal or outweigh the likely risk of spontaneous rupture over that same period.

Open repair—even in octogenarians—can be achieved with acceptable mortality even in the presence of co-morbidity (especially compared to results following emergency intervention for rupture).



**Figure 1.** Aneurysm presenting at over 8 cm should be referred for urgent repair.

## ABDOMINAL AORTIC ANEURYSMS— SIZE DOES MATTER!

All patients with ruptures and symptomatic patients should be considered for urgent surgery. Current use of endovascular devices means that this type of intervention is unlikely to be able to be offered to most patients with ruptured or symptomatic abdominal aortic aneurysms, regardless of age. Rapid assessment of the patient, preferably by the consultant surgeon and consultant anaesthetist, should be both aggressive in terms of offering potentially life-saving major surgery, but also realistic in those patients who are already unconscious, those with negligible cardiac output or those with major life-limiting co-morbid conditions, including metastatic neoplasia, with no realistic prospect of surviving surgery.

The risk of rupture depends on the size of the aneurysm. Small aneurysms can rupture, but this is relatively rare and is lower than the risk for elective surgery. Over 5 cm diameter maximum transverse diameter, rupture can be expected in about 25% of patients within 5 years. Although the risk of rupture in the Small Aneurysm Study (antero-posterior diameter) was only 1% per year for aneurysms <5.5 cm diameter, 61% of those allocated to surveillance were actually repaired by the end of the study (6 years). This was due to either the development of symptoms, appreciable increase in size or patient's requests for operative repair.

## RESULTS

Selection has a profound influence on operative results. Thirty-day mortality for elective aortic surgery in patients over 80 can be as low as 3–8%. However, in a combined district and teaching hospital regional audit of elective surgery in the over-80s, mortality was found to be 24% compared to 71% in ruptured cases. Morbidity depends on the circumstances of the repair, varying from 29% in elective cases to 52% in those operated on as an emergency. In a series of 1131 patients, Berridge *et al.* (1995) found that patients over 80 accounted for only 6.4% of elective cases, but constituted 11.8% of emergency cases. All these emergency cases would have had a better chance of survival if they had had the opportunity of being assessed and offered elective surgery.

## KEY POINTS

- Abdominal aortic aneurysms are a common cause of death in old age.
- >5.5 cm diameter should be considered for elective repair.
- Risk of rupture increases with diameter.
- Co-morbid factors need to be optimised.
- Endovascular repair can be considered.

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## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. Abdominal aortic aneurysms in the elderly may present as:
  - a) Renal or ureteric colic.
  - b) Back pain.
  - c) Transient collapse in a normotensive patient.
  - d) Epigastric pain.
  - e) Chest pain.

- 
2. Abdominal aortic aneurysms in elderly patients:
    - a) >5.5 cm should be considered for elective repair.
    - b) Ruptured aneurysms should not be repaired in patients >80 years of age.
    - c) Are more frequent in men with other features of atherosclerotic disease.
    - d) Clinical screening is reliable and cost-effective.
    - e) Cardiac status is a major determinant of outcome in both elective and emergency cases.

# 19. The management of atrial fibrillation

Anis Mamun, Michael Lye and Jeffrey B. Ball

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The improved survival of patients with congenital and acquired heart disease, the decreased prevalence of rheumatic heart disease and an ageing population have led to atrial fibrillation (AF) and chronic heart failure becoming primarily diseases of old age.

## PREVALENCE AND PROBLEMS

### Size of the Problem

AF is the commonest sustained dysrhythmia (premature beats or extrasystoles are non-sustained) and its prevalence rises with age. About 0.5% of those aged 50–59 years have chronic AF; between 65–69 years the prevalence is about 4%, rising to 11.6% in subjects over 75. 5.6% of people aged  $\geq 65$  years living at home have chronic AF.

Thus, about 70% of those with AF are between 65 and 85. The absolute number of men and women with AF is about equal. Other independent risk factors for an increased prevalence of AF are hypertension, diabetes mellitus, congestive heart failure and valve disease.

### Nature of the Problem

AF is a marker for both increased morbidity and mortality. The mortality rate in people with AF is twice that of those in sinus rhythm. Much of the increased morbidity and mortality is due to stroke and the negative haemodynamic consequences of AF. The annual stroke rate in subjects with AF is 5%. It is more than twice this (12% per annum) for those with a recent history of stroke/TIA and AF.

Individuals who have AF but no other cardiovascular risk factors have ‘lone’ atrial fibrillation. The likelihood of stroke in this group is not much different from age and sex matched control: 0–0.5% per year in those under 60, 1.6% amongst those aged 60–69 years, and 2.1% in the 70–79 age group. Most patients with AF have co-existing cardiovascular diseases, and lone atrial fibrillation is uncommon in elderly people.

## TYPES OF ATRIAL FIBRILLATION

Acute (minutes to days) atrial fibrillation in old age is commonly due to a stressful event, such as a chest or urinary tract infection. In the younger age group, it is more commonly due to alcohol excess, drug abuse, rheumatic or congenital heart disease, or after surgery. Myocardial infarction, hypertension and thyroid disease are precipitants for AF in both age groups. About 50% of cases of new-onset AF spontaneously revert to sinus rhythm within 48 hours.

Paroxysmal (recurrent) AF on the other hand does not normally have a precipitating factor, and is usually seen in young and middle aged people (<65 years) with no cardiovascular risk factors. It reverts to sinus rhythm spontaneously or with treatment. The natural history of paroxysmal AF is to proceed to chronic AF after a variable time.

Chronic AF (>6 months duration) is the commonest type, particularly in those over 75. In the very old ( $\geq 85$  years), most AF is chronic.

A UK community survey recorded a prevalence of 2.4% of AF in people aged 50 years or older, and nearly 80% of this was found in those over 70. About three-quarters had chronic AF, and the rest had paroxysmal AF.



## CONSEQUENCES OF AF

### Symptoms

Each may or may not be symptomatic. The most frequent symptoms are breathlessness, chest pain, dizzy spells, fatigue and palpitations. AF is commonly associated with heart failure or left ventricular dysfunction, particularly in older patients, where both conditions are common.

### Why Treat AF?

There are three reasons:

- Symptom control
- Optimisation of cardiac function
- Minimisation of risk of thromboembolism.

On average, AF reduces cardiac output by about 30%, but as much as 50% in people over 70 or in those with impaired diastolic filling (i.e. people with left ventricular hypertrophy, mitral stenosis, and hypertrophic or restrictive cardiomyopathy). In addition, people with AF may have exercise-induced tachycardia, which may further diminish exercise tolerance. This is reversed when sinus rhythm is reestablished.

## MANAGEMENT

### Rhythm or Rate Control?

Rhythm control is preferable in AF. In cases of acute, and most cases of paroxysmal AF, rhythm control should be the aim. In chronic persistent AF, one should generally try to restore sinus rhythm at least once. Although duration of the dysrhythmia is important in the likelihood of reversibility, this is not an absolute criterion.

### How Do We Achieve Rhythm Control?

#### *DC cardioversion*

The most effective and perhaps the safest method is transthoracic synchronised DC cardioversion. The success rate may be up to 90%. In most cases,

cardioversion is achieved with 200 joules or less. Pretreatment with an antiarrhythmic drug (e.g. ibutilide or digoxin) improves the success rate and reduces the energy level required. If the first attempt fails, a second attempt may be considered later.

A brief period of intravenous anaesthesia is required for this procedure. This is usually well tolerated—even in elderly people with cardio-respiratory compromise. Unfortunately, despite its efficacy and safety, DC cardioversion is underused in the UK.

Most patients with AF need anticoagulation. If, however, the duration of dysrhythmia is less than 48 hours, cardioversion may be carried out with a small risk of thromboembolism. Anticoagulation is needed for at least three weeks before and four weeks after a successful cardioversion. (The first three weeks are needed to stabilise any intracardiac thrombus, and the next four weeks are to prevent any thrombus formation while the atrium is regaining its full contractile strength.) Emergency cardioversion may override the need for full anticoagulation. Trans-oesophageal echocardiography (TOE) in expert hands may help visualise left atrial thrombus, but this technique is not yet widely available.

#### *Pharmacotherapy*

Chemical cardioversion is common in those admitted as an emergency, and used more frequently than DC cardioversion. It is less alarming to patients and easier to organise. Theoretically, many drugs from Class 1A (Quinidine, Disopyramide), 1C (Flecainide, Propafenone) or Class III (Amiodarone, Sotalol) may be used. Amiodarone (oral or parenteral) is the current favourite in the UK, particularly for older patients (Flecainide should be avoided in patients with ischaemic heart disease and heart failure). Amiodarone is effective and has minimal negative inotropic effects. This is important, as many of these elderly patients also have heart failure or ventricular dysfunction. There is a success rate of >60% for amiodarone, flecainide and propafenone. However, when the duration of atrial fibrillation is >10 days, the success rate drops to 40% or less. In acute situations and when given parenterally, patients must be closely monitored because of potential pro-arrhythmic effects and possible aggravation of left ventricular dysfunction. In addition, amiodarone has many side effects, which

develop insidiously, and may not be reversible after withdrawal. This makes regular follow-up for any patients on amiodarone desirable.

### Maintaining Sinus Rhythm

Following cardioversion—electrical or chemical—maintenance treatment with a drug is usually needed to maximise the chance of continuing in sinus rhythm. The commonest drug for this in Britain is amiodarone, while in North America it is quinidine. There have been many trials of the effectiveness of drugs to maintain sinus rhythm. In general, all are more effective than placebo. The successful maintenance rate at one year is about 25% with a placebo and 50% with quinidine. Similar success rates are seen with disopyramide, procainamide, sotalol and amiodarone. Many of the trials which compared relative efficacy were unblinded, small and of short duration. There was a bias towards younger subjects, and the results may not apply to older people.

All antiarrhythmic drugs are potentially harmful. It is not known whether rhythm control with drugs is safer and better than rate control.

### Paroxysmal AF

Class IA, IC and III drugs are effective in reducing the frequency of paroxysms. However, treatment is best individualised considering such factors as the frequency and severity of attacks, disruption in daily life and co-morbidity. Amiodarone is effective, but flecainide, propafenone and quinidine can be successful. Those having attacks during times of stress may benefit more from a beta-blocker.

Anticoagulation in paroxysmal AF is well-established therapy for those with cardiovascular risk factors. However, as this group is relatively young, fit and may have lone AF, the decision for or against anticoagulation has to be carefully evaluated in each case.

### Rate Control in AF

Rate control in AF is achieved through drugs that primarily act on the AV node to slow down conduction. They may be used singly or in

combination. The commonest is digoxin, followed by calcium antagonists (diltiazem, verapamil) and beta-blockers. Since elderly subjects with established chronic AF often have ventricular dysfunction ( $\pm$  heart failure), digoxin is the drug of choice and is widely used. It is well tolerated, cheap and a drug level can be measured if toxicity is suspected. However, the need for long-term rate control drugs in many elderly people who are otherwise restricted in their daily activities or have limited mobility is uncertain, as many maintain an acceptable ventricular rate for most of the time without intervention. In addition, with advancing age, nodal diseases are common, and ventricular response to AF is likely to decline. Fear of toxicity makes underdosing common, and in older people 125 microgram/day of digoxin is often too little.

The other two groups of drugs have restricted use, because of their negative inotropic effect, frequent side effects and poor tolerance. In younger people and those without heart failure, calcium antagonists or beta-blockers are preferred, as unlike digoxin these can control ventricular rate during exercise.

### Non-pharmacological Approaches

When medical treatment is unsuccessful or not tolerated, catheter ablation (modification of atrioventricular node) under local anaesthesia may be considered. The surgical option (“Corridor” and “Maze” procedures) involves major operations and is not particularly suitable for elderly subjects.

### Prevention of Thromboembolism

Anticoagulation is beneficial in the young old (65–75 years old). In a pooled analysis of the five major AF trials, warfarin reduced the risk of thromboembolic stroke by 68% (or 31 events per 1000 patients treated), and annual mortality by 33%. There was a 25% risk reduction with aspirin.

In general, the risk of serious haemorrhage is low (1% per annum both in the warfarin and aspirin group). The average age of patients in these trials was 69, and the results may not necessarily apply to over-75s. However, in those over 75 the risk is higher and so the benefit may be greater. This uncertainty needs to be resolved by a large

**Table 1.** Anticoagulation recommendations.

Age	Risk Factors	Recommendations
<65 years old	None	Aspirin or no Rx
	Yes	Warfarin
65–75 years old	None	Aspirin or Warfarin
	Yes	Warfarin
>75 years old	Yes or No	Warfarin

Risk Factors: stroke or TIA, left ventricular dysfunction, congestive heart failure, valvular heart disease, hypertension and diabetes mellitus (reproduced with the permission of the publisher).

controlled trial with adequate power to ascertain if benefits and low risks also occur in elderly subjects.

In younger patients (<65 years) with lone AF, the annual risk of stroke is no different from the general population (0.5%), and so warfarin may not be indicated. Our suggested practice for anticoagulation in AF is in Table 1.

#### *Problems with widespread use of warfarin*

Anticoagulation in AF is underused in primary and secondary care. There are three main reasons for this. First, there are still reservations about a favourable risk–benefit profile for anticoagulation in those over 75. Secondly, a physician’s attitude to anticoagulation in the frail elderly person may be guarded for other reasons, including cognitive deficits, problems with effective communication and difficult social circumstances. Thirdly, we need a big organisational change to introduce optimal anticoagulation for all eligible elderly subjects.

## THERAPEUTIC OPTIONS

Elderly patients often present to emergency departments with fast acute or acute-on-chronic AF due to an underlying cause, usually a chest or urinary tract infection. Most improve with treatment of the precipitating cause. However, if there is important haemodynamic compromise (systolic blood pressure <90 mmHg, or the ventricular rate >200/min.) or chest pain, cardioversion preferably electrical should be considered. All patients with AF should have their

thyroid function and electrolytes checked. The scope for rhythm control should be reviewed in each case, but may not be possible or appropriate in many older people. However, if sinus rhythm is established following intervention, many will require maintenance therapy, and these people should be followed up regularly.

The most important preventative treatment in AF is anticoagulation, and for some this may be the only treatment required. A target INR of 2.5 with a range of 2–3 is safe and effective. A lower fixed INR of 1.5 in combination with aspirin is much less effective and should not be considered. In patients over 75, close surveillance of anticoagulation is needed because of possible increased risk of bleeding. Patients who cannot be prescribed warfarin should be given aspirin.

There are uncertainties about the optimum timing for starting anticoagulation after a stroke. For secondary prophylaxis, it is wise to avoid anticoagulation for up to 14 days or until the neurologic deficits have resolved after a large embolic stroke, because of the risk of haemorrhagic transformation. For small embolic cerebral infarcts confirmed by imaging, anticoagulation may be restarted after 48 hours.

Common contraindications for warfarin therapy are frequent falls, dementia, immobility, poor health-related quality of life, alcoholism, haemorrhagic infarction and other bleeding problems.

## CONCLUSION

Management of AF both in terms of rhythm and rate control and use of anticoagulation are evolving. Although we have much more information than we had a decade ago, we are still unsure about the answers to many questions, particularly those involving old people.

## KEY POINTS

- In any patients with AF, particularly those who are newly diagnosed, think about rhythm control.
- If sinus rhythm cannot be established, consider anticoagulation.

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\*\*\* – Randomized Controlled Trials (RCT) or pooled data from RCTs

\*\* – Cohort/long-term observational study, non-randomized trial

\* – Prospective (short duration) survey/ postal questionnaire survey/consensus statement

## SELF-ASSESSMENT QUESTIONS

- The following statements are true or false:
  - AF is the commonest sustained dysrhythmia.
  - About a quarter of people with AF are  $\geq 75$  years of age.
  - Based on a 1991 census, a figure of 160,000–644,000 subjects over 65 years of age are estimated to have AF in the UK.
  - The risk of stroke in rheumatic AF is 10-fold higher than in the control.
  - The likelihood of stroke in lone AF is low; it therefore may be treated with aspirin instead of warfarin.
- The following statements are true or false:
  - The natural history of paroxysmal AF is to proceed to chronic AF after a variable time.
  - AF reduces cardiac output by 15%.
  - In elderly people with AF, rate control is preferable to rhythm control.
  - As a rule, full anticoagulation is advised for elective DC cardioversion as stroke rate of upto 7% occurs without it.
  - Drugs from Class 1A, 1B, 1C and Class III may be used for chemical cardioversion.

3. The following statements are true or false:
  - a) Recent trials have shown huge benefits of anticoagulation in people with AF.
  - b) In over-75s, anticoagulation is less effective than younger subjects in preventing thrombo-embolic stroke.
  - c) The risk of intracranial haemorrhage in over-75s may be as high as 2.8% compared to <1% in those under 75.
  - d) The average age of subjects participating in the five major atrial fibrillation trials (pooled data) were 69 years of age, and only 15% were over 75 years.
  - e) The over-75s, who are more likely to have a thrombo-embolic stroke, are more commonly anticoagulated than their younger counterpart.
4. The following are primary prevention trials, true or false?
  - a) Placebo controlled, randomised trial of warfarin and aspirin for prevention of thrombo-embolic complications in chronic AF: the Copenhagen atrial fibrillation (AFASAK) study.
  - b) Boston Area Anticoagulation Trial for Atrial Fibrillation (BAATAF). The effect of low dose warfarin on the risk of stroke in patients with non-rheumatic AF.
  - c) Stroke Prevention in Atrial Fibrillation (SPAF-I) study.
  - d) European Atrial Fibrillation Trial (EAFT) in people with non-rheumatic AF.
  - e) Canadian Atrial Fibrillation Anticoagulation (CAFA) study.

## 20. Asthma and chronic obstructive pulmonary disease

Lindsey Dow

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Up to 60% of older people living at home will have one or more respiratory symptoms, either intermittently or chronically.<sup>1</sup> Respiratory symptoms such as wheeze, breathlessness and cough with or without phlegm do not specify a diagnosis in their own right. Some patients will have multiple causes of those symptoms and this is more likely in heavy tobacco smokers as the risk factors for COPD and ischaemic heart disease are shared. Other information obtained from further questioning, examination (particularly of the respiratory and cardiac systems) and investigations will be necessary before one or more diagnoses can be made. Several appointments will usually be necessary so that the appropriate information is finally obtained for interpretation.

What additional information should you seek on history taking, examination and investigation to decide whether a patient may or may not have asthma or COPD? (see Figure 1)

### HISTORY

From the history, find out whether the wheeze is due to prolongation of expiration rather than retained secretions in the throat or stridor (possibly caused by upper airway obstruction). Are the symptoms intermittent (asthma) or chronic and slowly progressive (COPD)? What triggers the symptoms? Patients with asthma are more likely to report symptoms being brought on by cold air, smoke, allergens or chemical irritants. Airways obstruction from asthma or COPD can be triggered by certain drugs such as beta-blockers (topical or oral) and less frequently, aspirin or NSAIDs, so take a full drug history. What is the smoking

history? This is important but even in very heavy tobacco smokers, asthma can still be present so do not assume that all smokers have COPD. COPD is a gradually progressive disease and by the time a diagnosis is made, it has usually been present and associated with gradually deteriorating lung function over many years. See if the history of the symptoms supports this pattern of illness. There may be history of allergies but for reasons poorly understood, asthma in older people is not as strongly associated with eczema or hayfever as in younger people with asthma. Are there any other respiratory or non-respiratory symptoms such as haemoptysis or rapid weight loss—is there dual pathology, with lung cancer complicating a pre-existing condition, such as COPD or asthma?

### EXAMINATION

In the examination, look not only for the typical signs of severe chronic airflow obstruction (pursed lip breathing, barrel chest) but also for the other signs that may indicate another disease (or comorbidity) such as ischaemic heart disease with atrial fibrillation and congestive cardiac failure. There may be no abnormal physical signs in patients with asthma/COPD as the signs generally become present when the disease is more advanced.

### INVESTIGATIONS

The most important investigations are spirometry and home recording of peak expiratory flow (PEF). If it remains unclear whether the symptoms are caused by cardiac or respiratory disease, chest



**Figure 1.** Diagnosing asthma and COPD.

X-ray, ECG and occasionally, echocardiography are indicated. Most people aged 65 years and over are able to perform lung function to the required standard laid down in national or international guidelines. It is important that patients are carefully

instructed and lung function results are interpreted appropriately. As most geriatricians do not have expertise in lung function testing, referral of the patient to the lung function laboratory is usually a sensible option for the patient.

Spirometry will identify whether the patient has airflow obstruction (forced expiratory volume in one second FEV1 <80% predicted value for age, sex and height or FEV1/Vital Capacity <70%). In young adults, asthma is not normally associated with airflow obstruction but in older adults, airflow obstruction is frequently present. In the presence of airflow obstruction, spirometry should be repeated following inhaled beta-2-agonists and anticholinergics administered via a volume-spacer device or nebuliser. A clinically significant response is defined as at least 15% increase in the pre-bronchodilator FEV1, providing that the size of increase is at least 200 ml. The size of a significant bronchodilator response does not discriminate between asthma and COPD unless the post-bronchodilator FEV1 returns to near-normal, reflecting full reversibility almost certainly due to asthma. Following a bronchodilator trial, the patient can be provided with a peak flow meter to record the highest of three blows in the morning and evening for two or more weeks in order to look for 20% or more variation between morning and evening values. If the patient is agreeable, four measurement points within the day make the test more likely to pick up significant variation than measurements made only twice daily. PEF variation is calculated for each 24 hour period as the highest–lowest value divided by the highest. The presence of 20% or more variation in PEF is typical of asthma and patients should be treated with regular inhaled anti-inflammatory drugs and intermittent bronchodilators and regularly reviewed as outlined in the British Thoracic Society guidelines.<sup>2</sup>

COPD is diagnosed when the patient has chronic and progressive airflow obstruction. Usually patients with COPD will have some improvement in lung function following bronchodilator tests. Home records of PEF will fail to show 20% or more variability of PEF. Corticosteroid trial (prednisolone 30 mg/day for 2–4 weeks) or high dose inhaled corticosteroid trial (beclomethasone or equivalent 2 mg/day through a volume-spacer device) are recommended for patients with severe COPD (FEV1 less than 40% of the predicted value). A further assessment that is also important for patients with more severe disease is estimation of arterial gases, when oximetry is less or equal to 92% in order to decide whether patients require home oxygen for prolonged periods every 24 hours.

## TREATMENT

For both asthma and COPD, British Thoracic Society guidelines<sup>2,3</sup> are available and provide clear and concise information on treatment of both diseases.

In asthma, inhaled corticosteroids (and leucotriene antagonists) reduce airway inflammation as the mainstay preventative approach. Short-acting inhaled bronchodilators are used for relief of symptoms and longer-acting bronchodilators such as salmeterol are prescribed when sufficient control has not been obtained with preventative and relief therapy. There is much less need to use oral bronchodilators in airways disease in older people because of the availability of longer-acting inhaled bronchodilators. Oral bronchodilators can be associated with serious side effects such as cardiac arrhythmias and seizures when plasma levels become raised due to overdosage or impaired metabolism due to intercurrent illness from respiratory tract infection or cardiac failure.

Relief and/or long-acting bronchodilators are the mainstay of treatment in COPD. Smoking cessation is strongly recommended and advice should be combined with use of nicotine replacement therapy. The routine use of inhaled corticosteroids in patients with COPD remains controversial and present guidelines indicate continued use if the patient has obtained objective evidence of symptomatic and functional improvement with, preferably, evidence of change in lung function.

Patient and/or carer education is important for both diseases and many patients will be able to have a simple management plan drawn up in conjunction with their general practitioner or hospital physician. Agreement about clinical indicators that define when to use antibiotics or prednisolone, when to seek medical help, when to call for an ambulance are examples of the content of such a plan.

## INHALER DEVICES

On account of the higher prevalence of clinical problems in old age that may limit competent use of drug delivery devices, selecting the correct device for patients needs to be done with great care. There are many different inhaler devices and time is



required when the patient and, preferably, respiratory nurse in primary or secondary care in conjunction with the patient and/or carer can trial the different devices and find the most suitable one. Metered dose inhalers in conjunction with volume-spacer devices have been the traditional approach in older patients for many years. Use of the volume-spacer device increases lung deposition and reduces oropharyngeal side effects like dysphonia. Inspiration-activated devices are also effective. In very frail breathless patients, inspiration may be at too low a flow rate to adequately activate drug release and allow sufficient lung drug deposition. The proportion of patients with asthma or COPD in whom a nebuliser is required is extremely small as there is so much choice with different devices.

There are several groups of older patients in whom management of their asthma/COPD may be less than adequate. One such group is people with cognitive impairment, who may not be able to carry out satisfactory lung function tests, may be unable to coordinate correct inhaler technique and unable to pick up signs of worsening disease requiring medical help. These patients and their carers require a lot of attention. Their inhaler devices should be simple to use, such as the metered dose inhaler attached to a volume spacer. The carer can administer the drugs with the patient being encouraged to tidal breath. A anaesthetic mask over the mouth can be attached if the patient will not keep their mouth closed around the mouthpiece. Another group of vulnerable patients is those who are generally weak and unwell from severe disease with or without co-morbidity and do not have the strength to carry out repeated lung function tests or generate sufficient inspiratory flow to allow deposition of drugs in the airways. The latter group is particularly common in acutely unwell older people admitted into hospital. Attempts at diagnosis are better delayed until recovery has taken place and nebulisers are likely to be needed during the acute period.

Follow-up to reassess the effectiveness of treatment and how the patient is coping with the

inhaler devices prescribed is essential. As geriatricians, unless there is a specific respiratory interest, this is best done in primary care with the asthma/COPD nurse and GP.

As with other aspects of respiratory disease in older people, most research has concentrated on young and middle aged adults. In relation to asthma, there is little or no information on the importance of allergy and the relationship with other atopic disorders, such as eczema.

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## SELF-ASSESSMENT QUESTIONS

A 72-year-old ex-smoker of 40 pack years attends outpatients with a history of progressive breathlessness and wheeze over two years. Factors that support use of inhaled corticosteroids in combination with inhaled bronchodilators include which of the following:

1. Post-bronchodilator FEV1 change of 10% increase over the pre-bronchodilator FEV1.
2. Family history of asthma.
3. Twenty per cent or greater variation of within-day peak expiratory flow (PEF) on one or more days out of a 2-week PEF record.
4. Early morning haemoptysis.
5. A change in FEV1 from 1.9L to 2.4L following a trial of prednisolone 40 mg daily for 2 weeks.

## 22. Respiratory rehabilitation

Martin J. Connolly

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### INTRODUCTION

Respiratory disease ranks second only to musculoskeletal disease (and above stroke) as a cause of overall disability in elderly people.<sup>1</sup> Nearly fifteen years ago, Cockcroft defined respiratory rehabilitation as “returning patients with respiratory disability to as normal a life as possible, aiming for them to achieve independent function in all their life activities”.<sup>2</sup> With removal of the word “respiratory” from this definition geriatricians would recognise Cockcroft’s phraseology as an excellent definition of rehabilitation in general. Given this, and the numeric importance of respiratory disease as a cause of disability, it is surprising that respiratory rehabilitation has not hitherto occupied the thoughts and practice of most geriatricians. Possible reasons for this have recently been reviewed.<sup>3</sup> Atypical presentation and difficulties in detection of respiratory disease and disability are discussed elsewhere in this volume (see chapter on clinical ageing by Rai and Mulley).

The main aim of this chapter is to review the evidence (or frequently the lack of it) for the value of respiratory rehabilitation in elderly patients. I will extrapolate data from studies of younger patients (often a dangerous thing to do). I will also point out where evidence is lacking, and this may help direct the trainee to areas of further potentially fruitful research.

### COMPONENTS OF RESPIRATORY REHABILITATION

Respiratory rehabilitation requires an inter-disciplinary approach comprising: best medical therapy; smoking cessation (with help); patient and family education; exercise training and respiratory

muscle training; nutritional assessment and possibly support; psychological assessment and often intervention; and assessment for long-term oxygen therapy (LTOT). To be most effective, respiratory rehabilitation should be started as soon as possible and preferably before the patient becomes so disabled as to be housebound.

### SMOKING CESSATION

Most elderly patients requiring respiratory rehabilitation will have smoking-related COPD and many will still be smoking at the time of initial assessment. The value and feasibility of smoking cessation in old age have been reviewed very recently.<sup>4</sup> It is one of only two measures (the other being LTOT for some patients) that prolongs life in COPD. It is of value even in very elderly people. Patients who are unable or unwilling to stop smoking should not, however, be denied access to respiratory rehabilitation programmes. There is evidence for the value of nicotine replacement therapy in smoking cessation support in old age. Nicotine replacement can increase the quit rate in the motivated smoker to up to 20% at one year.<sup>4</sup> Smoking cessation is only part of the range of measures in a respiratory rehabilitation programme and should probably be addressed only after a trusting relationship has developed between the inter-disciplinary team and the patient.

### EXERCISE TOLERANCE TESTING

Exercise tolerance testing is a mainstay of assessment in pulmonary rehabilitation. It helps provide a baseline for the patient and the multidisciplinary team, and when repeated occasionally throughout

the rehabilitation programme its gradual improvement may provide continued motivation for the patient. Elderly patients are often put off by seemingly minor technology such as treadmills and bicycle ergometers and thus exercise assessment should be as simple as possible. The six-minute walk test has been validated in elderly patients with COPD.<sup>5</sup> Other tests, such as the two-minute walk test, the twelve-minute walk test, and the shuttle walk test, may be equally valuable.

## EXERCISE TRAINING

This is an essential component of all respiratory rehabilitation programmes. It should be done in outpatient units and comprises aerobic conditioning (both upper and lower body) together with inspiratory and expiratory resistance training (respiratory muscle training). In younger patients training improves not only exercise capacity but also quality of life.<sup>6,7</sup> Evidence for its value in these areas in old age is equivocal.<sup>5,8</sup>

The duration of benefit is also a matter of debate, with some studies suggesting that the improvements (at least in exercise tolerance) may last for up to 12 months in the absence of any maintenance programme and other data suggesting the converse.<sup>9,10</sup> In practice, a six to eight-week programme should comprise a physiotherapy-directed assessment session followed by individualised programmes of daily aerobic exercise (or small amounts of exercise three or four times daily). As many muscle groups as possible should be involved in the exercises, which might include walking, step aerobics (bottom step of a staircase), *light* weightlifting for upper body exercise, alternate standing and sitting, “punching the air” etc. There should be a supervised group session at least once weekly to check on technique and progress and to facilitate the positive support of a group environment. Exercising to music may help add variety and maintain motivation.

Home-based programmes may be particularly appropriate for elderly people,<sup>11</sup> but evaluation of these is needed.

Areas for research here include: further investigation of the value of training and exercise capacity and quality of life in old age; duration of any benefit; the effect on activities of daily living; and whether such programmes reduce frequency of falls.

## PSYCHOLOGICAL ASSESSMENT

Clinical psychology input is important in treating patients disabled with respiratory disease. In practice, however, such input is not always readily available. This is unfortunate as over 40% of elderly patients with severe COPD have depressive symptomatology,<sup>12</sup> and nearly as many have clinical anxiety. Our own unconfirmed data suggests that there is a strong association between anxiety and depression in the subject group, with anxiety being uncommon in those without depressive symptoms.

Most older patients, however, will not volunteer depressive symptoms and the detection rate in the absence of screening questionnaires is poor. This is a well-recognised phenomenon in depression associated with other chronic illness in old age.<sup>13</sup> The BASDEC questionnaire has proved useful in detection of depressive symptomatology<sup>12</sup> and is highly sensitive and specific in this subject group. The Hospital Anxiety and Depression scale has the theoretical advantage of detecting anxiety symptoms as well but has not been validated specifically in COPD in old age.

Treatment of depressive problems in this group of subjects is often difficult. Frequently, a patient is reluctant to accept the diagnosis and even more reluctant to accept antidepressant medication.<sup>14</sup> This is also seen in depression associated with many other chronic diseases in old age and is worthy of further research.

## ASSESSMENT OF DISABILITY

It is not possible to assess a patient's level of function from clinical examination and simple investigations such as spirometry or even exercise tolerance testing. Until recently there had been little validation of scales of activities of daily living (ADL) in people with chronic lung disease. The Barthel Index underestimates disability in this subject group but the Nottingham Extended ADL Scale is a good discriminator between normal elderly people and those disabled by COPD.<sup>15</sup> However, the Nottingham scale is not responsive to improvements resulting from treatment. A new scale, the Manchester Respiratory Activities of Daily Living scale, is both sensitive and specific for COPD in old age and is also responsive to

treatment in pulmonary rehabilitation.<sup>16</sup> This ADL scale may be more powerful predictor of mortality in elderly COPD subjects than spirometry (which has previously been regarded as the best mortality predictor<sup>17</sup>).

The use of a validated ADL scale is essential in the assessment of elderly patients with COPD whether or not they are participating in a respiratory rehabilitation programme. With such an assessment we can determine the impact of the illness on the patient's life; this may help in the design and tailoring of rehabilitation to each patient and planning an individual care package.

## COMMUNITY SUPPORT

Elderly patients disabled by COPD seem to receive less statutory community support than patients of the same age equally disabled by other conditions.<sup>18</sup> This is despite evidence that such provision helps increase social interaction and self-esteem and may also reduce hospitalisation.<sup>19-22</sup> The respiratory rehabilitation team should assess the needs for home care and meals-on-wheels. The value of occupational therapy assessment here is unproven, although it seems reasonable to suppose that there is a place for the provision of aids and appliances. This is an area worthy of research.

Where patients are provided with nebulisers or LTOT, there should be home-based assessment of patients' and carers' ability to use such devices, together with provision for regular servicing and an emergency telephone number for use in case of breakdown of nebulisers or oxygen concentrators.

## PALLIATIVE CARE

Many patients will not wish to participate in respiratory rehabilitation or will be too ill, frail or cognitively impaired to do so. Simple advice to patients to lie propped-up on their side (high-sided lying) often improves breathlessness at night in patients with severe COPD. These patients can be helped symptomatically by the use of high walking-frames, which reduce breathlessness.<sup>23,24</sup> Self-propelled wheelchairs are seldom useful because of the high level of aerobic work needed to propel them but outdoor battery-operated chairs or pushchairs may reduce social isolation and increase

independence. Chair-lifts for patients unable to climb stairs may be helpful. Provision of emergency alarm systems may help reduce anxiety, particularly in patients prone to severe attacks of breathlessness.

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## SELF-ASSESSMENT QUESTIONS

1. Stroke is a commoner cause of disability in old age than respiratory disease. True/False?
2. The one-year smoking quit rate for motivated elderly patients given nicotine replacement therapy may be up to: a) 5% b) 20% c) 30%.
3. The prevalence of depressive symptoms in elderly patients disabled by COPD is about 20%. True/False?
4. Self-propelled wheelchairs may improve independence of elderly patients disabled by COPD. True/False?
5. Respiratory rehabilitation programmes give sustained benefit for up to 12 months to elderly patients with COPD. True/False?
6. Exercise tolerance testing is the best method of assessing level of disability in elderly patients with COPD. True/False?

# 21. Tuberculosis

Charlie Teale

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## INTRODUCTION

Tuberculosis causes some three million deaths per year worldwide — a quarter of all preventable deaths<sup>1</sup>. Although more common in the developing world, recent increases in incidence in some developed countries<sup>2</sup> make it an important threat to health. In the United Kingdom around 30% of notifications for tuberculosis are in subjects over 65.<sup>3</sup> In this chapter I shall review the condition with particular reference to differences between older and younger subjects and suggest future areas of research.

## EPIDEMIOLOGY

In the United Kingdom the incidence of tuberculosis per 100,000 has fallen from over 200 to 11 in Scotland and 7 in England and Wales in the 20th century. This has been mainly because of improvements in public health, poverty and nutrition with a lesser effect of more recent screening programmes and effective chemotherapy.<sup>4</sup> This fall has been accompanied by a doubling in the proportion of notifications in older subjects from 14% to 29% between 1953 and 1979.<sup>5</sup> A recent survey in Scotland<sup>6</sup> reported the incidence of tuberculosis to be three to five times higher in subjects aged 65 years and over compared to those aged 15 to 44 years; the absolute number of notifications in subjects aged 65 years and over may be increasing, perhaps due to increases in the numbers of the very old in the population (although this increase has not been reported elsewhere in the UK). Notification rates for tuberculosis increase with age regardless of race, gender or ethnic group.<sup>7</sup> There have been outbreaks of tuberculosis in nursing homes<sup>8</sup> but a study from the UK suggests residents are not generally at increased risk.<sup>9</sup>

## PATHOGENESIS

In the early 1900s, 80% of the population was infected by the age of thirty.<sup>10</sup> Most cases now occurring in older subjects reflect reactivation of old 'healed' disease.<sup>11</sup> This occurs because of impaired immunity, related to such factors as disease, poor nutrition, poverty, and ageing.<sup>12</sup> A reduction in the incidence of tuberculosis in older subjects is unlikely for two or three decades, when there will be a new cohort of elderly people with a lower prevalence of previous infection.

## CLINICAL FEATURES

Several recent studies have examined the presentation and clinical features of tuberculosis in old and younger adults<sup>3,13–16</sup> although none have reported specifically on the very old (e.g. 80 years and over). The commonest presenting features of tuberculosis in both younger and older adults are cough, anorexia and lethargy while weight loss, fever, sweats and haemoptysis are all well recognised. The frequency of symptoms is broadly similar in both groups. In both elderly and younger subjects 80% to 90% of notifications with tuberculosis are for pulmonary disease. Non-pulmonary disease is rare in the UK but may affect particularly the skeleton, the urogenital system, and the meninges.<sup>12</sup>

## INVESTIGATIONS

The most important investigations in diagnosing tuberculosis are sputum microscopy and culture plus chest radiography. Upper-zone involvement on chest radiograph is reported in about 70% of young and

older subjects but mid- and lower-zone involvement is more common in old people seen in around 20% of cases in European and American studies;<sup>3,13–16</sup> interestingly, these ratios were reversed in an African study.<sup>17</sup> Miliary changes are seen in about 5% of older cases but are very rare in the young;<sup>3,16</sup> miliary tuberculosis is caused by blood-borne spread of many tubercles to the lung and other organs and may appear as small ‘millet-size’ nodules on the chest radiograph. Skin testing can be of value but a grade 3–4 Heaf reaction is seen in around a third of older subjects due to previous infection and may not help diagnosing new disease.<sup>18</sup> In addition, false negative results may be obtained in several circumstances such as miliary disease, immunosuppressant drugs and diseases such as lymphoma.<sup>12</sup> A raised sedimentation rate is common in younger and older subjects with tuberculosis<sup>15</sup> but anaemia and a reduced white count are more frequently seen in older subjects.<sup>14,15</sup>

## MANAGEMENT

Management is similar in older and younger subjects and requires curative chemotherapy and prevention of infection. Specialist referral is recommended because of the relative infrequency with which most geriatricians will manage such patients and the high mortality and incidence of side effects in older subjects. Standard therapy for fully sensitive organisms consists of two months of rifampicin, isoniazid and pyrazinamide with a further four months of just rifampicin and isoniazid (ethambutol may be added in the initial two months but is usually avoided in older subjects because of its ocular toxicity, while pyridoxine is generally given to protect against isoniazid-induced neuropathy<sup>19</sup>). Drug resistance is rare in old people, seen in only 2% of a survey in the UK.<sup>3</sup> Relapse usually reflects poor compliance and may be helped by simple regimes using once-daily combination preparations such as Rifater and Rifinah. Side effects are more common in older subjects; they necessitated stopping drugs in 18% of patients in one series compared with only 7% of younger subjects.<sup>3</sup>

## OUTCOME

Advanced age is an adverse risk factor for outcome. In one survey, 21% of tuberculosis in subjects 65

years and older was diagnosed post mortem compared to only 1% under 65 years.<sup>3</sup> Even after diagnosis and starting treatment, there is a high mortality (16%) from tuberculosis in subjects aged 65 years and older compared with 3% under 65 years.<sup>20</sup> It is not known whether mortality has improved over the past 20 years.

## SUMMARY

Tuberculosis is an important cause of preventable death which may often enter the differential diagnosis of ill older people. There are broad similarities between tuberculosis in older and younger subjects, though important differences exist. About 30% of cases diagnosed in the UK are diagnosed in subjects over 65 and are usually due to reactivation of old ‘healed’ disease. Tuberculosis usually presents with cough, anorexia and lethargy plus upper-zone changes on chest radiograph. Lower-zone and miliary disease are more frequent in older subjects. Treatment is similar in older and younger subjects but side effects are more common in the old. Death is much more frequent in older subjects, with around 20% of cases diagnosed post mortem and up to 20% dying despite treatment. A high index of suspicion is required to reduce the mortality from this potentially curable condition.

## FUTURE RESEARCH

Areas for future research include:

1. Epidemiology: are absolute numbers of notifications increasing?
2. Chest radiographs: do different racial groups have varying patterns of involvement in old people?
3. Treatment: are drug side effects dose related and are older subjects at greater risk of relapse?
4. Outcome: is mortality on treatment improving and are there common features of cases diagnosed at post mortem?
5. Age: are there differences in the oldest subjects, e.g. over 80 years?

## KEY POINTS

1. Epidemiology: 30% of notifications for TB in the UK aged 65 years and older.

2. Pathogenesis: usually reactivation.
3. Presentation: typically cough/anorexia/weight loss with upper-zone shadowing on CXR.
4. Management: the same as in young people — best to refer to specialist.
5. Outcome: one in six may die despite treatment.

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## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. Notifications for tuberculosis in old age in the United Kingdom are falling.
2. Apical shadowing on chest radiographs is typical of tuberculosis in older subjects.
3. Tuberculosis is usually associated with a blood leucocytosis in older subjects.
4. Death from tuberculosis is rare once an older patient is started on treatment.
5. In the United Kingdom nursing home residents should usually be considered to be at increased risk of tuberculosis.
6. A strong positive Heaf Test (grade 3–4) is highly suspicious of active tuberculosis.





## 23. Oral health

Robin Basker

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... *Last scene of all,  
That ends this strange eventful history,  
Is second childishness, and mere oblivion,  
Sans teeth, sans eyes, sans taste, sans  
everything.*

William Shakespeare.

### INTRODUCTION

Commencing this section with the quotation from *As You Like It* is somewhat risky since the quote is all too familiar and is full of negative stereotypes. Nevertheless, the reference to oral health was an accurate description of elderly people until very recently.

For example, the Report of the Survey of Adult Dental Health in the United Kingdom in 1998<sup>1</sup> revealed that whereas 80% of those aged 75 and over were edentulous in 1988 the corresponding figure for 1998 was 58%. The earlier figure was the legacy of dental neglect in the early and middle parts of the last century. The notable improvement is to a very large extent due to greater dental awareness, better treatment and the use of fluoride toothpaste by those who were middle aged some twenty to thirty years ago. The improvement has been maintained by this cohort which has moved forward to become today's elderly population.

Whilst the improvement in oral health is encouraging there is still a long way to go.

### THE VALUE OF NATURAL TEETH

Natural teeth are important for:

- eating
- speaking

- appearance
- social confidence (smiling, contact with people).

Significant tooth loss has been shown to have a significant social impact. For example, 13% of an elderly population reported that the state of the mouth had an adverse effect on the quality of daily life.<sup>2</sup> Of course, missing teeth can be replaced by dentures, be they partial or complete. Although dentures are substitutes and are less efficient than natural teeth they are a lifeline for so many people. In this context it is worth recalling a comment that 'Complete dentures are not a substitute for *teeth*. They are a substitute for *no teeth*'. It therefore follows that their loss can have a devastating effect (see *Lost dentures—a disaster*, p.212).

### CAUSES OF TOOTH LOSS

The main reasons for tooth loss are caries and periodontal disease. Both of these diseases are multifactorial in nature. The common causes are:

- Micro-organisms held within plaque which adheres to the teeth and mucosa;
- A ready supply of dietary sugars which, when metabolised by the micro-organisms, produce acids which decalcify tooth structure and other metabolic products which induce inflammation of the gingival and periodontal tissues.

Risk factors which are pertinent to elderly people and which will augment the basic causes are:

- Inadequate mouth cleaning—in terms of efficiency and frequency
- Inadequate cleaning of partial dentures

- Reduced manual dexterity and poor eyesight which reduce the ability to clean natural teeth and dentures
- A diet high in sugars
- In-between meal snacks of cariogenic food
- Frequent drinks sweetened with sugar
- Wearing dentures at night
- Reduced saliva flow which reduces buffering capacity and slows the oral clearance of sugars.

Partial dentures increase plaque formation and thus the risk to the health of the remaining teeth. With increasing age there is a tendency for more of the root of the tooth to become exposed. Root caries becomes a significant problem and can increase in severity as a consequence of reduced salivation and the presence of any of the other risk factors mentioned above.

The recent National Diet and Nutrition Survey<sup>2</sup> showed an added risk factor—where the elderly person lived. The survey compared the oral health status of those living in their own homes and those who were in care homes. The figures related to retention of natural teeth, root caries, cleaning of teeth and dentures are summarised in Table 1. Those living in care homes are a much higher risk population.

## ORAL HEALTH AND COMPLETE DENTURES

It is tempting to think that if one has got rid of the natural flotsam and jetsam in the mouth it is easier to create and maintain oral health. Such a belief would lull one into a false sense of security.

Plaque readily collects on dentures and becomes a haven for *candida* species. Denture plaque can cause a localised oral fungal infection known as denture stomatitis. This intra-oral reservoir can lead to the development of angular stomatitis.

Elderly people are prone to oral candidosis. Yeasts were isolated more often and in higher numbers from saliva in those 80 years and over.<sup>3</sup> Other predisposing factors include diabetes mellitus, malignant disease, antibiotics, steroids, immunosuppressants and radiotherapy.

## SYSTEMIC CONSEQUENCES OF POOR ORAL HEALTH

Poor oral health has wider health implications than simply affecting the comfort of the mouth.

- Old age brings with it an increase in the prevalence of yeasts, lactobacilli and staphylococci in the oral cavity.<sup>3</sup>
- Partial denture wearing *per se* leads to a significantly higher prevalence of yeasts, lactobacilli and mutans streptococci.<sup>4</sup>
- Available evidence supports the conclusion that periodontitis is a risk factor for atherosclerosis and coronary heart disease.<sup>5</sup>
- There is an association between poor oral hygiene and chronic respiratory disease and respiratory tract infection.<sup>6,7</sup>
- Most cases of bacterial pneumonia are caused by microaspiration of colonised oropharyngeal flora.<sup>8</sup>
- In addition, oral infections are linked with septicæmia, endocarditis and septic arthritis.

## PREVENTING ORAL DISEASE

Arising from the above discussion must logically come a consideration of measures which can be used to promote oral health amongst elderly people.

Above all else should be the recognition that elderly people are a high-risk group and that those

**Table 1.** A comparison of some aspects of oral health in two populations.<sup>2</sup>

Living at home		Living in care homes
50%	Those who have some natural teeth	21%
14%	Those who have 21 or more natural teeth	4%
	Root caries	Twice that of those living at home
50%	Those with gross collection of dental plaque	80%
4%	Those who clean their teeth less than once per day	13%
98%	Those who clean their own dentures	76%

living in care homes are particularly vulnerable. There is a need for better understanding and better co-operation between all members of the health team: doctors, dentists and nurses. The assessment, improvement and maintenance of oral health should be part of the normal agenda. Specific practical measures include the following:

### Care of Natural Teeth

- Clean with fluoride toothpaste at least twice per day. Regular use of fluoride toothpaste helps, in particular, to combat root caries in elderly people.
- Professional help and advice are required to monitor the health of the mouth and, where necessary, to advise on ways in which the effectiveness of tooth brushing can be improved. This measure can be especially important for those elderly people where deteriorating eyesight or arthritic changes to the hands has made the whole exercise that much more difficult.
- A chlorhexidene mouthwash should be considered where effective plaque control cannot be readily achieved.
- A simple modification to the toothbrush handle or the use of an electric toothbrush can improve efficiency markedly.
- Advice on diet and the avoidance of frequent intake of cariogenic food and drink.

### Care of Partial Dentures

- Partial dentures should be left out at night. It is important that they be cleaned effectively. A commercially available hypochlorite denture cleanser has been found to remove plaque deposits from denture surfaces.

### Care of Complete Dentures

- Complete dentures should be left out of the mouth at night if at all possible.
- They should be brushed with soap; this should be done over a bowl of water in case the dentures slip out of the cleaner's hands.

Plaque control may be made more effective by the use of a commercially available hypochlorite denture cleaning solution.

**Table 2.** Drugs causing a dry mouth.<sup>12</sup>

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Anticholinergics
Systemic antihistamines
Antidepressants
Antipsychotics
Systemic bronchodilators
CNS stimulants
Antineoplastic agents
Diuretics
Antihypertensives

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Another factor which increases the risk of oral disease is lack of saliva.

### THE ROLE OF SALIVA

Saliva lubricates the oral cavity, protects the natural teeth, gingival tissues and oral mucosa from disease and promotes the clearance of food and natural debris.

Reduced salivary flow is not believed to be a consequence of ageing. Perhaps the most common cause of the problem amongst older people is drug therapy. Dehydration may be a consequence of reduced fluid intake which itself may be a person's own response to a concern about incontinence. Drugs which commonly cause a dry mouth are listed in Table 2.

### Consequences of a Dry Mouth

Lack of or absence of saliva has major consequences to a person's comfort and health.

The problems may be summarised as follows:

- A rapid increase in root caries and in periodontal disease. This is due mainly to a reduction in the normal buffering capacity of saliva and to a slower rate of clearance of food residues. The disease process can be so dramatic that teeth which had been healthy for many years suddenly have to be extracted.
- People complain of difficulty in swallowing, altered taste and generalised discomfort in the mouth.
- There is an increased risk of oral candidosis.

- Denture wearing becomes a problem. The absence of normal lubrication leads to soreness of the oral mucosa as a denture inevitably moves over the tissue. In the absence of saliva there is a dramatic loss of retention of the upper complete denture.

### Care of Patients with Dry Mouths

- Where the condition is drug-induced it may be possible to alter the regime to reduce the xerostomic effect.
- Sugar-free chewing gum can act as a gustatory stimulus and the very act of chewing can help to 'milk' the available saliva.
- The various artificial salivas are produced in convenient aerosol packages and give considerable help.
- Of the greatest importance is to attend to the various risk factors. This approach is particularly vital when looking after people who, in terms of oral health, are regarded as high risk before even considering the reduction of saliva. Attention to tooth cleaning, diet, the use of fluoride toothpaste and fluoride mouth rinses becomes imperative.

### CONTROLLING DENTURES

The larger the denture and the fewer the number of natural teeth, the more does the wearer have to actively control the denture. This section will be devoted to complete denture wearers as they still form the majority amongst elderly people and because their success is so heavily dependent upon the motivation and skills of the wearer.

Complete upper dentures benefit from physical retention and are therefore usually less troublesome than lower dentures. Nevertheless, skill is needed to control them when eating. The prime example is the act of incising on a piece of food with the front teeth. It will be appreciated that a force directed upwards in the incisor region is capable of causing the back of the denture to drop and for the wearer to complain of looseness when eating. Most people do not experience such a problem simply because they have learned to stabilise the back of the denture with the dorsum of the tongue. Those who are not able to learn this trick, in spite of appropriate

advice, will remain dissatisfied denture wearers.<sup>9</sup>

The lower denture is a more formidable challenge. It is, in effect, cocooned within a group of very active muscles, the tongue on the inside and the lower lip and cheeks on the outside. Success will be achieved if the denture has been designed correctly and the wearer learns the necessary motor skills. If the wearer is unable or unwilling to learn these skills treatment will fail, even though the shape of the denture is theoretically correct. Effective motor activity is dependent upon adequate sensory feedback. If there is sensory deprivation in the oral cavity the wearer has little idea where the denture is and therefore has enormous difficulty in controlling it.

Motor control is an acquired reflex. If a totally new shape is placed in the mouth the wearer has to learn new muscular tricks. And this fresh demand may be made at a time or at an age when the ability to adapt is, at best, noticeably reduced. This thought leads to the next section.

### LOST DENTURES—A DISASTER

Most complete dentures have been worn for many years. Elderly people have become used to manipulating these faithful friends.

If the dentures are lost the dentist and the patient have to start again from scratch; there is no clue as to what had been the successful shape. Five or six appointments will be needed to provide replacements. Whether the patient is then able to adapt to the new shapes is quite a different matter. The older the patient, the more critical is the situation.

Dentures can be lost in a variety of ways. In hospitals and care homes the sluice and the laundry appear to be favoured routes. In an attempt to reduce the problem the following actions are suggested:

- The care programme should record whether the patient possesses dentures, what type they are and whether they are normally worn. It is also useful to note if they are being kept safely by the family during the patient's stay in hospital. Such information can save hours of time and not a little frustration.
- An understanding should be established within the care team that dentures, if in the ownership

of the patient, will be found in one of two places—in the mouth or in a clearly labelled denture pot. If not, a search must be made urgently.

- It is helpful to mark dentures with the patient's name.

The reader may feel that a good deal of fuss is being made over seemingly such a small matter. This contributor feels he has no need to apologise. Teeth contribute considerably to life's pleasures. These pleasures include...

*'Food, Glorious Food'*

Eating is one of life's pleasures. Some of that pleasure may be lost in old age for a variety of reasons, including economic ones, having to eat alone, and the state of the teeth.

A reduced ability to eat can have an adverse effect on diet and nutritional status.

The recent National Diet and Nutrition Survey: people aged 65 years and over<sup>2</sup> came to the following conclusions:

- Edentulous people had more problems eating than those who still retained their natural teeth.
- More problems were experienced by those who had fewer natural teeth and by those who had fewer pairs of occluding teeth.
- These particular groups of people experienced greater problems with foods which required more chewing, as did those people who had dry mouths.
- More dietary restrictions were noticed in those elderly people living in care homes rather than in their own homes. In the former there was a higher frequency of sugar-rich foods.
- The mean intakes of most nutrients were consistently lower in those people living in care homes than those living in their own homes. Interestingly, within the care home sample there was little difference between those who still had their own teeth and those who were edentulous. It was almost as if the diet was being tailored to the reduced capacity of edentulous people.
- There was a large difference in Vitamin C levels between those living in their own homes and those in care homes. Edentulous people living in care homes had Vitamin C levels which were at the lowest extreme of the normal range.

## POSTSCRIPT

This section of the book suggests that there is considerable room for improvement in the oral health care of elderly people and that a poor level of health can have a marked effect on the quality of life.

A recent study<sup>10</sup> concluded that in many nurse training establishments there were deficiencies in the syllabus relating to oral care and that there was a need for more liaison between the nursing and dental professions to remedy the situation.

It is suggested that more liaison between all members of healthcare teams would benefit the patients and also the members of those teams.

Finally, mention should be made of a very helpful information sheet which provides answers to questions which are most likely to concern elderly people.<sup>11</sup> This publication serves as a useful source document for all carers, as does a most informative package entitled 'Making sense of the mouth'.<sup>12</sup>

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# 24. Faecal incontinence, soiling and constipation

James A. Barrett

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## Ano-rectal Continence Mechanisms

The following all contribute to the maintenance of anal continence:

- Internal anal sphincter activity, producing anal resting tone
- External anal sphincter activity, producing voluntary anal squeeze and reflex anal contraction when the rectum is initially distended
- Anorectal angle (which is normally less than 100 degrees)
- Anal sensation, including sampling reflex
- Slit shape of anal canal
- Vascular and mucosal components

## Defaecation

- Requires relaxation of the anal sphincters (recto-anal inhibitory reflex)
- Varies with stool consistency (more difficult when stool is hard)
- Often follows a gastrocolic reflex (whole gut mass movement following eating and/or exercise)
- Normal frequency varies between twice per week to 3 times per day

*“The bowels don’t need to empty every day!”*

**Constipation and faecal incontinence are very common in older people**, especially those who are frail and disabled. There are a number of age-related changes which increase the risk of faecal incontinence in old age (background factors) with other specific factors that lead to loss of continence.

## BACKGROUND FACTORS

### External Anal Sphincter Weakness

Anal squeeze pressure falls with age and probably also with immobility but this does not necessarily need to lead to loss of bowel control.

Pudendal neuropathy will often be present due to old childbirth stretch injury (especially if forceps were used) or chronic straining at stool.

### Loss of Anal Sensation

Anal sensation is often impaired in older people and in incontinent patients but does not necessarily result in faecal incontinence, even when totally absent.

### Immobility

This may contribute towards faecal incontinence due to either:

- Physical factors, i.e. loss of gastrocolic reflex; or
- Dependency upon others, especially if urgency of defecation.

## SPECIFIC FACTORS

### Faecal Loading, Especially with Soft Faeces

- Most common cause of faecal incontinence in older people
- Faecal soiling in faecally loaded patients is more common when soft stool is present and leakage



usually occurs before a call to stool is experienced

- Usually associated with loss of the anorectal angle

### How Do You Define Constipation?

**Common answers** *Infrequent bowel movements*  
*Straining to pass stool*  
*Hard stools*

The faecally loaded incontinent patient, however, may leak up to 10 times per day, doesn't have to strain and has *very soft stools*.

### What Does the Term Faecal Impaction Mean?

**Possible answer** Rectum and colon full of *hard faeces*

**but** less than 10% of faecally loaded patients have a rectum loaded with hard stool.

### Correction to an Old Wives' Tale

*Spurious diarrhoea* around a large mass of hard faeces in the rectum is not common in the frail elderly. Overflow incontinence is due to massive amounts of soft faeces in the rectum leaking out. It is not due to mucous secretion caused by the faecal mass.

**Constipation** can be the presenting symptom of colonic disease and may require investigation.

'Idiopathic constipation' can be classified as either slow transit or normal transit constipation.

Slow transit (usually due to lack of colonic propulsion) predominates in frail elderly people. Their whole gut transit times often exceed 14 days (normal <5 days). Some of these patients develop a megarectum. Abdominal radiographs will often demonstrate extensive faecal loading throughout the colon.

Normal transit patients tend to experience major problems with the process of defecation, e.g. inappropriate sphincter contraction on attempted defecation or obstructed defecation due to rectocele or intussusception. Defecating proctography may

help in diagnosis.

**Loss of rectal awareness of the call to stool** may also contribute towards the development of constipation.

### Internal Sphincter Weakness With Low Anal Resting Tone

Anal resting tone does not change with age.

Low resting pressures are found in incontinent patients of all ages. One possible cause of this is physical disruption of the sphincter. This can be demonstrated in special centres by use of anal ultrasound.

In some incontinent patients, the anus gapes open. It cannot therefore delay the passage of liquids but it can still delay the passage of solid material. Continence may be restored therefore by changing stool consistency.

### Diarrhoea

Acute and/or chronic diarrhoea may lead to faecal incontinence.

*Clostridium difficile* is now a particular problem in hospital. The profuse diarrhoea and malaise tend to overwhelm continence mechanisms. Preventative measures should include adoption of strict antibiotic policies and handwashing by all staff before and after contact with patients.

### Loss of Cognitive Awareness

**Unconsciousness.** The most basic requirement for control of bowel evacuation is for a person to be awake. Loss of this will inevitably lead to faecal leakage, as voluntary control is not possible.

**Dementia.** Many patients with advanced dementia are incontinent of faeces usually due to severe mental confusion and loss of awareness of the 'call to stool'.

**Behavioural.** Many patients with severe behavioural problems defecate in inappropriate places, e.g. in the lounge of a residential home. This is presumably due to severe frontal lobe damage or degeneration and proves very difficult to manage; it may also be associated with faecal smearing and/or coprophagia.

Quote from caring daughter soon after mother's death:

*"In the later stages of her dementia mum didn't have a clue where she was or what she was doing. I thought that the district nurses were marvellous giving her the suppositories every Monday and Thursday. We knew when her bowels were going to work and it helped us to be able to keep her at home right up to the end. We had very few accidents once they started giving the suppositories."*

## HISTORY AND PHYSICAL EXAMINATION

The history needs to include enquiry into:

- Bowel habit past and present, including awareness of call to stool, defecation, stool consistency and episodes of leakage
- Diet enquiry should ask specifically about fibre content
- Laxative use
- Mobility

**Physical examination** to include:

- Abdominal examination for presence of palpable faecal mass(es)
- Anorectal examination looking for evidence of perineal descent, gaping anus, rectal prolapse, perianal scarring and/or soiling
- Digital examination to assess anal resting tone and squeeze and to determine whether there are any abnormal rectal lesions or faecal loading of the rectum. If the rectum is loaded, then determine the stool consistency. This can be classified as either hard, firm, soft or loose. Alternatively, reference could be made to the Bristol Stool Chart
- Cognitive assessment

**Bowel investigations** will occasionally be indicated to exclude important bowel pathology. Not all incontinent patients will necessarily need them. If requesting investigations such as barium enema in someone with faecal incontinence, remember that they are likely to experience profuse diarrhoea and incontinence during the bowel clearance in preparation for the test and there is a high chance that they will not retain the barium. You may put them

through the test without obtaining any useful clinical information.

**After a barium enema 100 patients were asked "Would you like another one?" 100% replied that they would not.**

## HOW DO YOU HELP SOMEONE WITH BOWEL PROBLEMS?

The management plan proposed below for **faecal incontinence and constipation** is goal-orientated. (The aim should also be to educate mentally competent patients about how their bowels work, how to regain control and how to respond to changes in their bowel habit, as the problems are often ongoing.)

The two main aims in bowel management in old age are:

1. **To produce stools of the ideal consistency— not too hard nor too soft**
2. **Bowel emptying to occur at a predictable time**

*The ideal stool has been christened the 'Goldilocks stool' because it is not too hard and not too soft but "just right". Most old people with faecal incontinence, however, produce stools which resemble Goldilocks porridge, i.e. soft and gooey. That would not be "just right" as it is precisely the type of stool which leaks easily and is very messy to clean up.*

Aim number one is usually the initial target for patients seen at home whereas aim number two 2 is usually the initial target for patients in hospital or a care home.

### **Treatment Aim Number 1: To Produce Stools of the Ideal Consistency—Not Too Hard Nor Too Soft**

#### *Too hard*

If stools are too hard the aim should be to soften them to produce a firm stool which is easy to pass when defecation is attempted.

**Increase dietary fibre intake?** 'Healthy eating' is widely promoted and appears to be desirable for otherwise healthy people to reduce their risk of diverticular disease and other colorectal abnormalities, including constipation.

Fibre is effective at softening stool, increasing its bulk and stimulating defecation.

This, however, is not usually desirable as a treatment for frail elderly subjects with constipation or anyone with faecal incontinence as the high fibre intake adds to the existing colonic faecal loading and increases the risk of faecal incontinence. Fibre also causes flatulence.

An alternative is to soften hard stool with an **osmotic laxative**, e.g. Lactulose. Lactulose exerts its osmotic effect only in the small bowel. It increases faecal weight, volume and water content as well as bowel movements and usually acts within two days. Alternatives include Docusate which is a faecal softener but a poor laxative. Magnesium sulphate is a potent osmotic laxative to reserve for some resistant cases.

#### *Too soft (or diarrhoea)*

**Diarrhoea** is often associated with faecal incontinence. Whilst the cause is sought, use of antidiarrhoeal agents (constipating drugs) can considerably improve patients' symptoms. The most popular drug in this class is loperamide, which is effective in altering stool consistency from soft to firm and (if too much is used) to hard. It may prevent faecal incontinence by mechanisms other than changing stool consistency—loperamide has been shown to influence internal sphincter function. Alternative agents in this class include codeine phosphate.

The main challenge when using loperamide to alter the stool consistency for patients with **soft stools** is to get the dose right as too much induces severe constipation. The following starting doses are suggested:

- Soft stool—0.5 mg/day of the syrup preparation titrated slowly up or down depending on result
- Liquid stool—2–4 mg/day but may require much higher doses initially until stool becomes firmer.

Maintenance doses of loperamide tend to fluctuate depending upon stool consistency in individual patients. Some patients require very little, i.e. 0.5 mg once per week, whereas others require large doses. A patient education programme in which patients modify their own dose of loperamide to achieve the goal of the ideal stool consistency appears to be the most effective regimen.

#### **Treatment Aim Number 2: Bowel Emptying to Occur at a Predictable Time**

This is achieved in normal circumstances by defecating in an appropriate place by consciously responding to the call to stool.

The method used to assist patients who are experiencing problems either opening their bowels or controlling when their bowels open depends on a number of factors. These include the presence of faecal incontinence, discomfort due to a loaded colon and/or a rectum that the patient cannot empty, and the patient's mental state.

**In the presence of faecal incontinence** the initial aim of treatment should be to empty the rectum and colon within a few days to prevent faecal soiling. The preferred treatment is to empty the rectum by administering an **enema or suppository** each day until the faecal mass is cleared.

Usually when suppositories are used to stimulate defecation, glycerine suppositories are used but more potent stimulation of defecation may be obtained by use of bisacodyl. Suppositories are best inserted blunt end first, as they are easier to insert and better retained than the traditional 'sharp end first' method.

Microenemas are now the preferred enema—not only are they effective and easy to administer, they are free from the adverse effect of rectal gangrene occasionally reported due to nozzle injury from insertion of a phosphate enema.

Occasionally suppositories and/or enemas are ineffective at inducing defecation in either the acute or chronic situation, when manual removal of faeces may be required, especially if the stool is very hard. This is often the only treatment available for patients with an atonic rectum, which is particularly prevalent among patients with severe spinal cord lesions, e.g. multiple sclerosis, traumatic cord lesions, in whom the parasympathetic supply to the rectum is deficient.

In patients who are faecally loaded with soft or formed stool but not incontinent or in discomfort, the preferred treatment is a stimulant laxative given orally. The most commonly used are senna (Senokot), sodium picosulphate and bisacodyl, which act directly on the myenteric plexus. They should be given at night as they take 10–14 hours to reach the colon, where they exert their effect—which ideally should occur during the day rather

than during the night. Long-term use of stimulant laxatives should be avoided, if possible, especially in younger patients as they may cause myenteric plexus degeneration.

Occasionally, a combined osmotic and stimulant laxative, e.g. codanthromer, codanthrusate, is required when softening stool has not induced defecation or in patients with drug-induced constipation, e.g. secondary to opiates.

## Long-term Bowel Management

### *Maintaining a regular pattern of bowel emptying*

In about 50% of elderly patients who are constipated during hospitalisation for an acute illness, the problem resolves with the treatment of their underlying illness. Other patients, however, have a continuing tendency to 'constipation'. Their whole gut transit time is not necessarily reduced by the clearance of the faecal loading. Laxatives are the main treatment for these patients but some require regular emptying of their bowel from below using either enemas or suppositories.

### *Treatment of the faecally incontinent demented patient*

Incontinence in these patients is usually secondary to faecal loading, which should be cleared as outlined. A regimen of planned defecation should be implemented by the use of an enema 1–3 times per week if there is a continuing tendency to faecal incontinence and/or constipation. A constipating drug may be needed to prevent leakage between enemas. Poor compliance with treatment tends to limit its success, especially in patients with severe behavioural problems. Strategies that may help these patients include the administration once weekly of a potent stimulant laxative, e.g. sodium picosulphate (initial dose 5 mg at 10 pm).

### *Treatment of anorectal incontinence, i.e. weak anal sphincters*

The principles of treatment are similar to those already described. Maintaining a firm stool will help in most cases. Moderate success (approximately 60%) has been reported with surgical repairs in young and middle aged incontinent patients but its

use cannot be recommended for elderly people as the problem tends to be multifactorial.

### *Outcome of treatment for faecal incontinence*

In most cases the simple measures described above are effective. The outcome of treatment is, however, influenced by the presence of other problems, e.g. dementia, especially when there are behavioural problems. The main anorectal factor that influences outcome is rectal prolapse, as the ideal stool for a prolapse patient is soft rather than firm.

Quote:

*"I have been able to go on coach trips to Scotland again since I started taking the Loperamide. I thought I would never be able to travel again. It's wonderful to have my life back again after the miserable time I've had with my bowels. I never thought the answer would be so easy. I just give myself an extra dose before I leave home and I can be confident I won't embarrass myself on the bus."*

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## SELF-ASSESSMENT QUESTION

Which of the following statements are true?

1. Faecal incontinence in the elderly is more likely to occur in men than women.

2. The most common cause of faecal incontinence in the elderly is faecal loading with soft faeces.
3. A barium enema should be performed in the investigation of all older people with faecal incontinence.
4. Rectal examination rarely provides useful information in the incontinent patient.

# 25. Prostate diseases in the elderly man

Ian Eardley and Russell Wilson

## INTRODUCTION

Three main disease processes can affect the prostate. Of these, infection of the prostate (prostatitis) is most commonly seen in young men, but benign prostatic hyperplasia (BPH) and prostatic carcinoma are almost exclusively seen in elderly men. Urologists will manage most of these men, but an understanding of these conditions will be valuable to the geriatric physician to guide appropriate investigation, treatment and referral.

## BENIGN PROSTATIC HYPERPLASIA

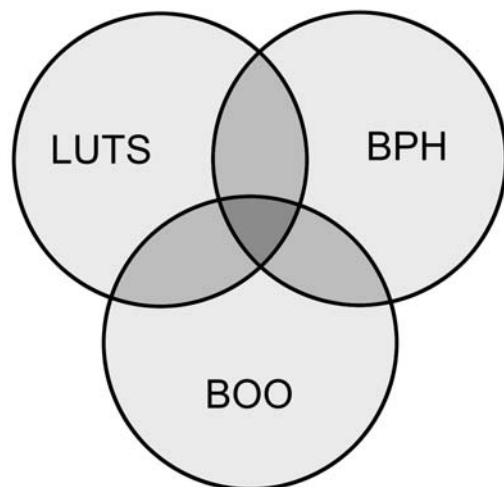
### Introduction and Epidemiology

Terminology is unfortunately confusing when discussing the benign prostate. Benign prostatic hyperplasia (BPH) is a histological term although it is often used as a clinical diagnosis. The incidence of BPH increases with age. Overall, more than 60% of men over the age of 60 years have histological evidence of BPH. About 50% of these men will have symptoms as a result, and these symptoms are usually known as Lower Urinary Tract Symptoms (LUTS). In some of these men, there will also be bladder outflow obstruction (BOO) as a direct consequence of the enlarged prostate, and bladder outflow obstruction is a urodynamic diagnosis.

While some men will have BPH, LUTS and BOO, not all men with BPH have symptoms, and not all are obstructed. Furthermore, LUTS can arise as a result of other conditions (e.g. detrusor instability, neurogenic bladder) and BOO can also be caused by other diseases (e.g. urethral stricture, prostatic carcinoma) (Figure 1).

## Pathogenesis and Complications of BPH

An insight into the symptoms (Table 1) and complications (Table 2) of BPH can be gained by reviewing the pathophysiological consequences of benign enlargement of the prostate. BPH restricts the flow of urine from the bladder, leading to hesitancy of micturition and a reduced urinary stream. The bladder must work harder to overcome the increased resistance of the prostate. It hypertrophies and may develop secondary detrusor instability with frequency of micturition, nocturia, urgency and occasionally urge incontinence. Later in the disease, the bladder is unable fully to overcome the increased resistance, and it fails to empty. There is an increased



**Figure 1.** The relationship between benign prostatic hyperplasia (BPH), lower urinary tract symptoms (LUTS) and bladder outflow obstruction (BOO).

**Table 1.** Symptoms of BPH (lower urinary tract symptoms).

Symptoms due to increased prostatic resistance (Voiding symptoms)	Symptoms due to detrusor hypertrophy and detrusor instability (Storage symptoms)
<ul style="list-style-type: none"> <li>• Hesitancy</li> <li>• Poor stream</li> <li>• Terminal dribbling</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency</li> <li>• Nocturia</li> <li>• Urgency</li> <li>• Urge incontinence</li> </ul>

**Table 2.** Complications of BPH.

<ul style="list-style-type: none"> <li>• Acute painful urinary retention</li> <li>• Chronic painless urinary retention</li> <li>• Overflow incontinence</li> <li>• Urinary tract infection</li> <li>• Bladder calculus</li> <li>• Hydronephrosis</li> <li>• Renal failure</li> <li>• Haematuria</li> </ul>
--

risk of urinary tract infections and bladder calculus formation. In some cases the bladder hypertrophy, together with the residual urine, results in very high pressures within the bladder, which are transmitted to the kidney, causing hydronephrosis and renal failure. In others, the smooth muscle of the bladder is gradually replaced by fibrous tissue resulting in a large floppy bladder with overflow incontinence.

One of the commonest complications of BPH is acute urinary retention (AUR). The exact pathogenesis of AUR is unknown but there is an increased risk in older men, in those with large prostates, in those with more severe symptoms and in those with the lowest urinary flow rates. Haematuria may also complicate BPH, due to the hypervascularity of the prostate which is commonly associated with the BPH process.

**Common Clinical Problems**

*Lower urinary tract symptoms*

Assessment

Lower urinary tract symptoms (Table 1) are not solely a feature of BPH, and indeed are not only

**Table 3.** Causes of lower urinary tract symptoms (LUTS).

<ul style="list-style-type: none"> <li>• Benign prostatic hyperplasia</li> <li>• Prostatic carcinoma</li> <li>• Detrusor instability</li> <li>• Urethral stricture</li> <li>• Neurogenic bladder</li> <li>• Hypocontractile bladder</li> <li>• Nocturnal polyuria</li> </ul>
--

confined to men! A number of other conditions can give rise to LUTS (Table 3) and assessment must distinguish between these differing causes. A second objective of the assessment is the identification of complications and the final objective is to ascertain the degree to which symptoms affect the quality of life of the patient. These latter two features—namely the presence or absence of complications and the degree to which the condition affects quality of life—will usually direct treatment, as will the presence of any co-morbid conditions. The symptoms that typically arise from BPH are outlined above (Table 1) and some of the more important features that may be seen on clinical examination are listed in Table 4.

Baseline investigations are a mid-stream urine, serum electrolytes, an ultrasound scan of the urinary tract and a urinary flow rate (Table 5). Other occasional tests include the prostate specific antigen (PSA), transrectal ultrasonography, urine cytology, cystoscopy and urodynamic studies (Table 6).

Treatment

Treatment options in elderly patients include surgery (transurethral prostatectomy), medication

**Table 4.** Important findings on clinical examination.

• Neurological disease	Possible cause of LUTS
• Anaemia	Possible result of uraemia
• Palpable bladder	Complication of BPH
• Phimosis	Possible cause of LUTS
• Meatal stenosis	Possible cause of LUTS
• Hard irregular prostate	Possible carcinoma of prostate

**Table 5.** Baseline Investigations in LUTS.

Test	Purpose	Notes
Mid-stream urine	Identification of haematuria, pyuria or infection	—
Serum electrolytes	Identification of uraemia	—
Ultrasound of urinary tract	Identification of hydronephrosis, poor bladder emptying or calculi	Post void residuals greater than 100 ml are significant. If greater than 300 ml, the upper tracts are at risk
Urinary flow rate	Identification of reduced flow	Need a voided volume greater than 125 ml. Peak flow rates less than 12 ml/sec are significant

( $\alpha$  adrenoceptor blocking agents or 5  $\alpha$  reductase inhibitors), catheterisation or ‘watchful waiting’.

- Transurethral prostatectomy (TURP). Given appropriate patient selection, around 80–90% of men will achieve a successful result. Complications include retrograde ejaculation (~80%), impotence (~10%), urethral stricture (~4%), incontinence (~1%) and the requirement for repeat surgery (~10% over 5 years). There is around a 1% mortality rate.
- Alpha adrenoceptor blocking agents. These drugs act by relaxing smooth muscle within the prostate, thereby reducing the resistance to flow. About 60–70% of men respond to treatment, although the magnitude of improvement is less than that seen following TURP. They are rapidly effective and side effects include postural hypotension (5%) and flu-like symptoms (5%).
- 5  $\alpha$  reductase inhibitors. These drugs inhibit the conversion of testosterone to dihydrotestosterone, leading to shrinkage of the prostate by around 30%. About 50% of men have modest improvements in

symptoms and flow rate. Men with larger prostates respond best, and there appears to be a long-term reduction in the risk of urinary retention. It takes 6 months to be effective and side effects include impotence (5%).

- Catheterisation. This is only indicated when other treatments are not possible.
- Watchful waiting. Natural history studies suggest that at least 50% of men do not deteriorate over a 5-year period if treated conservatively. If the man has modest symptoms and no complications, he may wish to avoid surgical or drug treatment. He will have a ~5–10% risk of urinary retention over a 5-year period (depending upon his age and prostatic size).

The treatment of an individual with LUTS secondary to BPH is influenced by:

- The presence (or otherwise) of complications. If complications are present, then surgical treatment is usually necessary.

**Table 6.** Occasional investigations in LUTS.

Test	Indication	Purpose
PSA	1. Irregular prostate on rectal examination 2. Case finding for prostate cancer (controversial)	Identification of prostate cancer
Transrectal ultrasound	Raised PSA or hard irregular prostate	Identification of prostate cancer
Urine cytology	Haematuria or pyuria	Identification of bladder cancer
Cystoscopy	Haematuria	Identification of bladder cancer
Urodynamics	1. Neurological disease 2. Prior to prostate surgery 3. Previous prostate surgery 4. Equivocal bladder outflow obstruction	Confirm urodynamic diagnosis



- Co-morbid conditions. These may preclude surgery or anaesthesia. Occasionally, the presence of cardiovascular disease may also prevent the use of  $\alpha$  adrenoceptor blocking agents.
- Patient choice. Surgery provides the greatest subjective and objective improvement compared with other treatments. However, it has more complications. In many cases the degree to which the patient is bothered by his symptoms will determine the treatment that he is willing to undergo.

In all cases, thorough counselling of the patient is vital so that the treatment can be tailored to the individual.

#### *Painful (acute) urinary retention*

##### Assessment

Painful urinary retention in men can be due to BPH or it may arise as a complication of another condition or therapy (Table 7). These causes must be identified, if present, and any other complications of BPH should also be identified. Following catheterisation, investigation includes a mid-stream urine, serum electrolytes and an abdominal X-ray (to identify urinary calculi).

##### Treatment

Urethral catheterisation with a 12 or 14 Fr Foley catheter is appropriate. The amount of urine drained from the bladder should be recorded. Any precipitating cause for the urinary retention which can be treated should be treated before a trial without catheter (TWOC). In men who have developed urinary retention following some other surgery, a period of 4–6 weeks is usually necessary before the TWOC is performed. If there are no obvious precipitating causes for the retention, a TWOC is only indicated if there was less than 800 ml in the bladder at the time of catheterisation *and* if there were no pre-existing LUTS. Under these circumstances, there is a reasonable (30–50%) chance that the patient will be able to void without any further treatment.

When the cause of the retention is BPH, and when there is a significant residual volume at catheterisation (i.e. >800 ml), or when the patient has failed a TWOC, then the only therapeutic

**Table 7.** Precipitating (transient) causes of acute urinary retention.

- 
- Constipation
  - Urinary tract infection
  - Surgery
  - Excessive alcohol intake
  - Use of anticholinergic drugs (e.g. tricyclic antidepressants)
  - Neurological disease (e.g. multiple sclerosis)
  - Bladder calculi
- 

options are TURP or catheterisation (either permanent or intermittent). In most cases, the surgical option is the best unless the patient is unfit for surgery.

#### *Painless (chronic) urinary retention with renal failure*

##### Assessment

There are often only mild LUTS, although there is often a history of nocturnal incontinence. On examination the bladder is distended and painless. The renal function may be considerably impaired, and ultrasound scanning confirms bilateral hydronephrosis. Occasionally, such cases can present with gross peripheral oedema or with hypertension.

##### Treatment

Catheterisation will relieve the retention, but caution is needed in these cases:

- Sepsis. Patients with chronic retention of urine often have infected urine, and catheterisation may precipitate a septic episode. Parenteral antibiotics are needed before catheterisation.
- Haematuria. Decompression of a grossly distended bladder can lead to haematuria, which may be severe. The haematuria usually settles within 24 to 48 hours, and no extra precautions or treatment are needed.
- Post-obstructive diuresis. In men with bilateral hydronephrosis and impaired renal function, catheterisation leads to the development of a diuresis that may be considerable (6–12 litres/24 hours) and prolonged (2–7 days). The mecha-

nism is incompletely understood, but probably reflects maintained glomerular filtration in the context of inadequate tubular reabsorption. Careful monitoring of fluid balance and serum electrolytes is essential and fluid supplementation with intravenous fluids is often necessary.

Definitive treatment is usually by TURP, although ultimate bladder function is not always perfect as a consequence of the prolonged period of over-distension before diagnosis and treatment. Chronic retention of urine should never be treated by medication and/or catheter removal alone.

## PROSTATIC CARCINOMA

### Introduction, Epidemiology and Aetiology

Prostatic carcinoma (CaP) is the 4th commonest malignancy in the UK (after skin, lung and large bowel) and the 2nd commonest cause of cancer death (after lung). Ninety-five per cent of all cases of CaP are diagnosed in men aged between 45 and 89 years, the median age of diagnosis being 72 years (Table 8). The condition varies significantly by geography and by race. For instance it is rare in Japan, although in Japanese immigrants to the USA, the incidence approaches that of native North Americans. This may reflect some dietary factor which has aetiological importance. The highest incidence of CaP in the USA, however, is in the Afro-Caribbean population.

The aetiology of CaP is not fully understood, but it is probably multifactorial. There are genetic factors, as alluded to by the varying racial differences in incidence. Furthermore, a positive family history for CaP is an important risk factor for the development of the disease. Dietary fat may be

an important risk factor via some alteration in sex hormone production.

### Pathology and Natural History

Prostatic carcinoma appears to exist in two forms. First, there is a histological (latent) form, which has been shown in post mortem studies to be present in 30% of men aged 50–59 years and 60–70% of men aged over 80 years. In these men, the disease process is entirely asymptomatic. It is usually only identified as an incidental finding at TURP or as a result of a needle biopsy for a raised PSA. The second form of CaP is a clinically evident form. Quite what causes the latent form of the disease to become clinically apparent is, as yet, unknown. What is clear, however, is that in many men with latent prostate cancer, there is no progression. Only around 20–30% of those men with histological CaP will ever develop clinical prostate cancer and of these only 15–20% will die from the disease.

What we know about the natural history of prostate cancer is crucial to the rationale for therapy of prostate cancer. The course of the disease is mainly affected by the stage and grade of the tumour at presentation. In general, the higher the stage and the less well differentiated the tumour, the greater the risk of metastasis, progression and death. For instance, men with localised low grade disease are unlikely to develop progression within 10–15 years while men with metastatic disease at presentation have a median survival of around 30 months. The most commonly used staging system is the TNM system and the most widely used histological grading system is the Gleason grading system, which provides a number between 2 and 10 according to the degree of differentiation. The greater the number, the less well differentiated the tumour.

**Table 8.** Incidence of prostate cancer in the UK.

Age (years)	Incidence per 100,000
65–69	175
70–74	300
75–79	500
80–84	650
85+	850

### Common Clinical Problems

#### *Localised prostate cancer*

In elderly men the tumour will usually be identified by chance, either at TURP, or following a needle biopsy in a man with a raised PSA. The PSA will typically be less than 20 ng/ml. Men with a small cancer within the prostate have:

- A low risk of metastatic disease at the time of presentation
- A low risk of progression of the disease within 5 years
- A low risk of dying from prostate cancer within 10 years.

Accordingly, aggressive local treatments are only appropriate in men with a life expectancy greater than 10 to 15 years. Local radical therapy is therefore occasionally offered to men up the age of around 75 years, but in most other elderly men, a policy of ‘watchful waiting’ is followed. At present there is some doubt as to the relative efficacy of the varying local treatments, and randomised controlled trials are in place to assess the relative merits of these therapies:

- Radical prostatectomy. An open or laparoscopic surgical procedure with complete excision of the prostate and the pelvic lymph nodes. A 5–10% incontinence rate and a 50% impotence rate accompany mortality rates of around 1–2%.
- Radical radiotherapy. Delivered in one of two ways, either by external beam or by interstitial treatment (brachytherapy). Complications include impotence, proctitis, urinary retention and haematuria.
- Watchful waiting. Regular assessment and monitoring of the patient, by clinical assessment and PSA testing. PSA might not be a perfect diagnostic test for prostate cancer, but it is an excellent tumour marker and will usually identify disease progression. When there is significant disease progression as demonstrated by a rise in the serum PSA, endocrine therapy is the usual treatment (see later).

### *Management of raised PSA*

Prostate specific antigen is secreted by the normal prostate, but is secreted in increased amounts in men with prostatic disease or following instrumentation (Table 9). It also increases with age and with increasing prostate size. The normal range therefore is age dependent, and for men over 70 years of age, a level greater than 4 ng/ml is usually considered important. At very high levels (>60 ng/ml) and in the absence of recent prostatic surgery, the underlying cause is nearly always prostate cancer, but at lower levels, benign causes are

possible (Table 10). Given what we know about the natural history of the disease and given the current attitudes to the treatment of men with localised prostate cancer, a number of questions arise:

- Which elderly men should have a PSA test? The short answer is that it should be tested in men in whom it would alter management. It should be tested when there is a suspicion of metastatic disease, where endocrine therapy might help clinically. It should *not* be used a screening tool in asymptomatic elderly men, since most of any cancers identified would not need treatment in the lifetime of the patient. It is now common practise to test PSA in all men presenting with LUTS, but even this is controversial in the urological community.
- What is the appropriate management for an elderly man with a raised PSA? The answer to this is again influenced by the attitudes to treatment. To make a diagnosis of prostate cancer, a transrectal ultrasound scan and biopsy is needed, but there are complications including bleeding and infection (in ~5–10% of cases) so it is not an investigation to be undertaken lightly. Accordingly, in an elderly man with a PSA in the approximate range 4–30 ng/ml who has a life expectancy less than 10 years, most urologists would pursue an expectant policy. At the other extreme, an elderly man with a PSA over 100 ng/ml would usually be investigated. Clearly, there are a wide variety of clinical situations between these two extremes, but the general principles should be clear. In elderly patients, there is usually little point in striving to identify localised disease, because it probably would not be treated. In contrast, if there is a suspicion of metastatic disease, then urgent investigation is justified.

**Table 9.** Causes of a raised PSA.

- 
- Prostate cancer
  - Benign prostatic hyperplasia
  - Prostatitis
  - Urinary tract infection
  - Following cystoscopy or TURP
  - Following catheterisation
  - Following prostate biopsy
-

**Table 10.** The chances of detecting a prostatic cancer on biopsy.

Serum PSA (ng/ml)	Chance of detecting CaP on biopsy
<4	2%
4–10	25%
>10	50–65%

*Locally advanced prostate cancer*

Prostate cancers that have penetrated through the prostatic capsule carry a much higher risk of progression, metastasis and death. So unless there are important co-morbid conditions treatment is usual, even in elderly subjects. Patients will typically present with either lower urinary tract symptoms, a raised PSA (usually around 20–50 ng/ml), or an abnormal digital rectal examination. Staging of the disease is important by means of bone scan, PSA, full blood count and liver function tests. If LUTS are present, then an ultrasound scan of the urinary tract and a flow rate are valuable. Optimal treatment is unclear, but external beam radiotherapy or hormone therapy or both treatments combined are options. With treatment, 5- and 10-year survival in this group of patients are around 50–60% and 20–30% respectively.

*Metastatic prostate cancer*

## Assessment

About 40% of all patients with prostate cancer have metastatic disease at the time of initial assessment. Half of these men will have symptoms attributable to their prostate cancer, while the other 50% will be asymptomatic. Bone pain is the predominant symptom of metastatic disease, due to skeletal metastases. Renal failure (5%), pathological fractures, spinal cord compression and bone marrow infiltration are also occasionally seen. Constitutional symptoms of disseminated malignancy are usually present (e.g. lethargy, weight loss). The serum PSA is usually elevated over 50 ng/ml and may be over 1000 ng/ml. A transrectal ultrasound scan and biopsy may be needed to provide tissue for histology. Sclerotic deposits are typically found in the pelvic girdle and lumbosacral spine, and usually identified

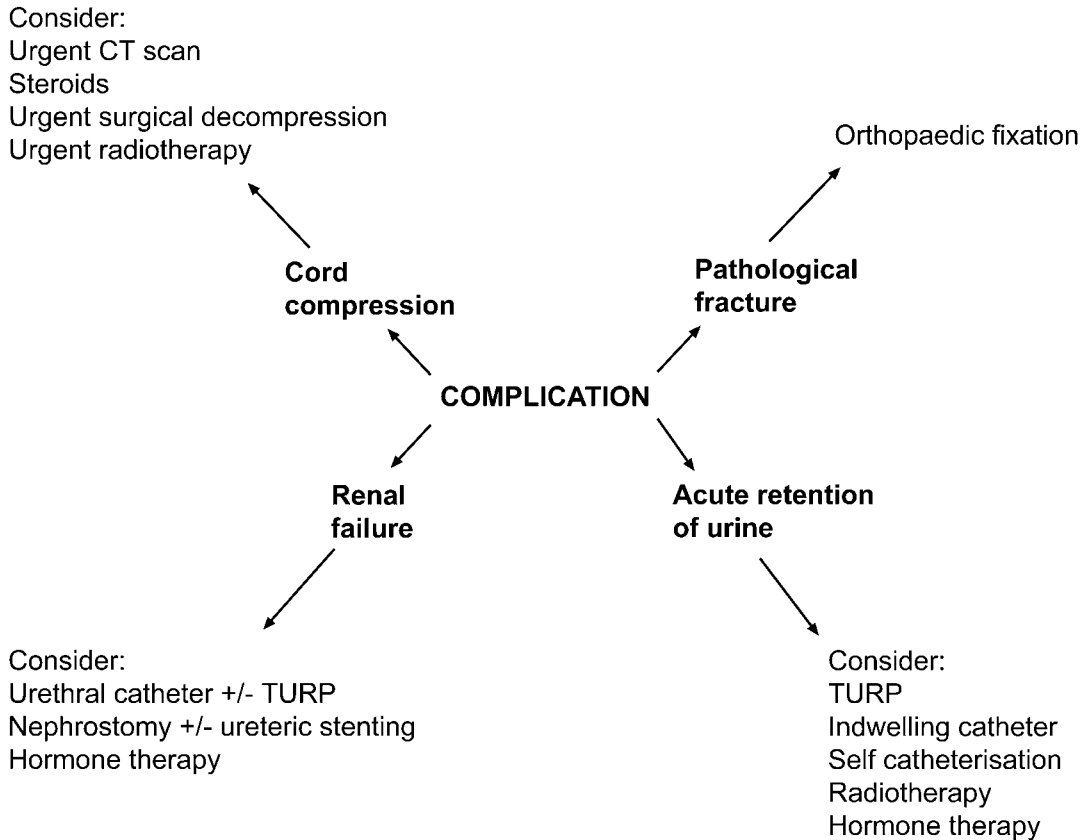
by bone scan and/or X-rays. A full blood count might give circumstantial evidence of marrow infiltration and both serum calcium and liver function tests can be valuable.

## Treatment

Most prostatic cancers are dependent for their growth upon testosterone. Removal of testosterone leads to regression of most tumours (around 80–90%). A small number of androgen insensitive cells are left, and some time later these cells proliferate and an androgen insensitive tumour again progresses. Around 90% of circulating androgens emanate from the testis and the remaining 10% come from the adrenal gland. Although there are several methods of androgen deprivation, there is no evidence that any are superior in efficacy. Most concentrate only on removing the testicular androgens. Treatment is tailored to the individual and will depend upon the mode of administration, the required speed of onset and the side effects of treatment.

## Methods of androgen deprivation

- Surgical castration. There is a rapid fall of plasma testosterone levels to basal levels within 1 to 2 days. It can be performed under local anaesthetic and the side effects are primarily immediate loss of libido, impotence and hot flushes. Its main role nowadays is in those cases where rapid response to treatment is needed (e.g. spinal cord compression, obstructive renal failure).
- Luteinising hormone releasing hormone (LHRH) analogues. These inhibit the secretion of LH from the pituitary gland which in turn leads to reduced testicular testosterone secretion. They take approximately 2 weeks to suppress testosterone to basal levels. Before that they initially enhance testosterone secretion and can induce a “flare reaction”. Skeletal metastases can become increasingly painful and may result in cord compression. This period should therefore be covered by a simultaneous administration of an anti-androgen. Side effects include loss of libido, impotence and hot flushes. The drugs are given by depot injection every 1 or 3 months.
- Antiandrogens. These are direct competitive in-



**Figure 2.** Complications arising from metastatic prostatic cancer and their management.

hibitors of the androgen receptor and are of 2 types—steroidal (e.g. cyproterone acetate) and non-steroidal antiandrogens (e.g. flutamide, bicalutamide). All are taken orally each day and side effects include hepatic dysfunction, lethargy, impotence (all cyproterone), diarrhoea and painful gynaecomastia (flutamide and bicalutamide).

- Oestrogens. Stilboestrol is still occasionally used but because of the high incidence of cardiovascular-related side effects, aspirin is usually given in conjunction with it.

#### *Other situations*

In the later stages of prostate cancer a number of complications can arise. Figure 2 deals with the broad plan of management for patients with these.

Ultimately the tumour becomes refractory to hormone therapy. Once present, hormone refractory prostate cancer usually leads to the death of the patient within 10 months. It manifests itself as a rising PSA whilst on endocrine therapy. Second line treatments with the oestrogens, steroids and cytotoxics have all been used with variable but minor efficacy.

#### **CONCLUSION**

Prostate disease is essentially a disease of elderly men. With the increasing age of our population, the clinical situations outlined above will become more common. However, the principles of treatment are not too complicated. In the elderly patient, treatment must be tailored to the individual, always

remembering the effect of other co-morbid conditions.

## RECOMMENDED READING

### Benign Prostatic Hyperplasia

#### Standard Text:

Kirby, McConnell, Fitzpatrick, Roehrborn, Boyle (eds.) (1996) *Textbook of Benign Prostatic Hyperplasia*. Isis Medical Media.

#### Other References:

Berry, S.J., Coffey, D.S., Walsh, P.C. *et al.* (1984) The development of benign prostatic hyperplasia with age. *J. Urol.*, **132**: 474.

Guess, H.A. (1995) Epidemiology and natural history of benign prostatic hyperplasia. *Urol. Clinics of N. America*, **22**: 247–261.

Lepor, H., Auerbach, S., Puras-Baez, A. *et al.* (1992) A randomized multicenter placebo controlled study of the efficacy and safety of terazosin in the treatment of benign prostatic hyperplasia. *J. Urol.*, **148**: 1467–1474.

Madersbacher, S. and Marberger, M. (1999) Is transurethral resection of the prostate still justified? *BJU Int.*, **83**: 227–237.

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Wasson, J., Reda, D., Bruskewitz, R. *et al.* (1994) A comparison of transurethral surgery with watchful waiting for moderate symptoms of benign prostatic hyperplasia. *N. Eng. J. Med.*, **332**: 75–79.

### Prostate Cancer

#### Standard Text:

Belldegrun, A., Kirby, R.S. and Newling, D. (eds.) (1999) *New Perspectives in Prostate Cancer*. Isis Medical Media

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Albertsen, P.C., Fryback, D.G., Storer, B.E. *et al.* (1995) Long-term survival among men with conservatively treated localized prostate cancer. *JAMA*, **274**: 626.

Al-Booz, H., Ash, D., Bottomley, D.M. and Carey, B.M. (1999) Short term morbidity and acceptability of 125 iodine implantation for localised carcinoma of the prostate. *BJU Int.*, **83**: 53–56.

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Whittemore, A.S., Kolonel, L.N., Wu, A.H. *et al.* (1995) Prostate cancer in relation to diet, physical activity and body size in blacks, whites and Asians in the United States and Canada. *J. Nat. Cancer Ins.*, **87**: 652–661.

## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

- Recognised complications of BPH include:
  - Renal failure.
  - Acute retention of urine.
  - Transitional cell carcinoma of the bladder.
  - Prostate cancer.
  - Haematuria.
- Appropriate early assessment for a 78-year-old man in acute painful urinary retention, with a smooth prostate gland on rectal examination, includes:
  - Serum electrolytes.
  - Abdominal x-ray.
  - Catheter specimen of urine for culture.
  - Prostate specific antigen.
  - Ultrasound of the urinary tract.
- In the treatment of BPH:
  - 5  $\alpha$  reductase inhibitors may take up to 6 months to produce symptomatic improvement.
  - $\alpha$  adrenergic agonists are rapidly acting drugs for the treatment of BPH.
  - Transurethral prostatectomy commonly results in permanent urinary incontinence.
  - Erectile dysfunction is a recognised complication following TURP.
- Regarding carcinoma of the prostate:
  - The incidence falls with increasing age.
  - Most cases never produce clinical symptoms.
  - Most cases that do present clinically never kill the patient.
  - The mortality can be reduced by population screening.

- 
5. Treatment options for a 78-year-old man with a localised prostate cancer and a PSA of 12 ng/ml include:
- Radical prostatectomy.
  - Prostatic brachytherapy.
  - $\alpha$  adrenoceptor blockers.
  - Watchful waiting.
  - LHRH analogues.
6. Treatment options for a 72-year-old man with metastatic prostate cancer and a PSA of 665 ng/ml include:
- Radical prostatectomy.
  - Prostatic brachytherapy.
  - $\alpha$  adrenoceptor blockers.
  - Watchful waiting.
  - LHRH analogues.

## 26. Urinary tract infections

Rosaire Gray

Urinary tract infections (UTI) are among the most common infections in humans. Although usually uncomplicated, they are often recurrent and cause considerable morbidity. About 40% of nosocomial infections are urinary in origin and these infections are a major cause of gram-negative bacteraemia and mortality. Both UTI and asymptomatic bacteriuria are common in elderly people (Table 1) and especially those in long-term care.

### DEFINITION OF URINARY TRACT INFECTION

On the basis of the work of Kass in 1956,  $10^5$  colony forming units (CFU) of a single species per ml in a midstream specimen (MSU) of urine became established as 'significant' bacteriuria. This definition has a very low sensitivity, about 0.50, for detecting infection in some groups. While it still holds in asymptomatic patients, in other circumstances lower thresholds are considered 'significant' (Table 2). These criteria have specificities of about 85% and sensitivities of about 95%.

*Asymptomatic bacteriuria* is defined as clinically significant bacteriuria ( $10^5$  CFUs per ml) in two consecutive cultures from a patient without symptoms attributable to the urinary tract. It may be intermittent.

- The prevalence increases with age in both sexes but its significance remains unclear.

**Table 1.** Prevalence of bacteriuria.

	65–85 years	>85 years
Women	15%	25%
Men	5%	15%

**Table 2.** Criteria for significant bacteriuria.

$\geq 10^2$	CFU coliforms/ml in a symptomatic woman
$\geq 10^5$	CFU non-coliforms/ml in a symptomatic woman
$\geq 10^3$	CFU of a single species/ml in symptomatic men
$\geq 10^5$	CFU of a single species/ml on two consecutive specimens in asymptomatic individuals
$\geq 10^2$	CFU of a single species/ml in a specimen obtained by suprapubic aspiration in symptomatic patients

- Other than in pregnancy or in association with instrumentation of the urinary tract, there is no convincing evidence linking asymptomatic bacteriuria to the subsequent development of acute infection.
- Except in pregnancy, there is little evidence that treatment protects against subsequent renal damage.
- In patients with **indwelling catheters** bacteriuria is almost universal. Suprapubic catheters have a lower prevalence of bacteriuria than urethral catheters. Catheter-associated bacteriuria is an important source of gram-negative bacteraemia. However, treating asymptomatic bacteriuria has no effect on the incidence of fever, new episodes of bacteriuria, or the number of bacterial strains identified in urine specimens. **Antibiotics should be avoided in catheterised patients unless they have symptomatic infection.**

### SYMPTOMS OF URINARY TRACT INFECTION IN ELDERLY PATIENTS

The characteristic symptoms of lower urinary tract infection or cystitis include some combination of dysuria, frequency, urgency, haematuria and



suprapubic discomfort. Acute symptomatic UTI can cause urinary incontinence. However, in the absence of other symptoms, the relationship between bacteriuria and incontinence is unclear and treatment of the bacteriuria does not often relieve the incontinence. It is important to be aware of this and avoid repeated unnecessary courses of antibiotics.

The elderly patient with a UTI may present atypically with falls, immobility, confusion or poor general health. Treatment of these patients with appropriate antibiotics generally results in a return to their previous state of health. Urine culture is indicated, as resistant organisms are not uncommon. While awaiting results, empirical treatment (see below) should be started and then altered appropriately. In patients with atypical symptoms, a positive urinary nitrite test (see below) is an immediate and reliable indicator for the presence of infection, with a 100% specificity and over 80% sensitivity.

### DIAGNOSIS OF URINARY TRACT INFECTION

There are a number of diagnostic tests available for urinary tract infection (Table 3) but all have limitations. Proteinuria alone is not a useful diagnostic test.

- *Urine microscopy* to detect gram stained organisms or leucocytes is rarely used, as it is time consuming and subject to wide variability.
- *Macroscopic or microscopic haematuria* is present in about 50% of patients with UTI but on its own is not diagnostic of infection. In the absence of infection, haematuria should be further investigated. In those with infection, it is

**Table 3.** Diagnostic tests for UTI.

• Urine microscopy
– Pyuria
– Gram stain
• Urine culture
• Rapid assay techniques
– Leucocyte esterase
– Urinary nitrite
– Haematuria

**Table 4.** Indications for urine culture.

- |  |
|--|
| • Doubt about the diagnosis  |
| • History of recent urinary tract infection (within 3 weeks)                       |
| • Recent instrumentation of the urinary tract                                      |
| • Diabetes mellitus  |
| • Pyelonephritis suspected   |
| • Recent antibiotic therapy  |
| • Structural abnormalities of the urinary tract                                    |
| • Immunosuppressed patients  |
| • Suspected urinary tract infection in elderly patients with atypical presentation |

important to check that the haematuria resolves on treatment of the infection.

- *Urine culture* has been traditionally used to confirm or exclude the diagnosis of UTI but is no longer considered essential. Table 4 shows currently accepted indications for urine culture. Conventional culture techniques require about 24 hours to obtain an accurate colony count. Automated culture systems produce faster results but have limited value in detecting low colony counts and have a threshold of  $10^4$  CFUs per ml. An MSU may fail to detect nearly 50% of UTIs in symptomatic patients (especially young women) and false positive rates of up to 17% are reported.
- *Leucocyte esterase* is an enzyme found in leucocyte granules. It can be detected by the blue colour reaction with a chloracetate stain impregnated in a dipstick pad (Ames Multistix 8SG, Bayer Diagnostics). The test has been validated and the sensitivity is 75–96% and specificity 94–98% (Table 5).

**Table 5.** Accuracy of strip tests for diagnosis of UTI in elderly subjects.

	Sensitivity (%)	Specificity(%)
Nitrite	83	100
Blood	67	66
Protein	72	66
Urinary leucocytes	72	81
Classical symptoms	28	59
Pyrexia	22	84

- *Nitrite* in the urine is produced by the action of bacterial nitrate reductase on dietary nitrate. It can be detected by its action on an amine impregnated pad on a urine dipstick to form a diazonium compound. This results in a pink colour reaction (Ames Multistix 8SG, Bayer Diagnostics). False negatives may result from insufficient dietary nitrate, or insufficient urinary nitrite levels due to diuretics. *Staphylococci*, *enterococci* and *pseudomonas* species do not produce nitrate reductase. Therefore, the sensitivity of this test is low (35–85%) but the specificity is high (92–100%) (Table 5).

## INFECTING ORGANISMS

The microbiology of urinary tract infection in older people differs from that in younger patients. *Escherichia coli* is still the commonest infecting organism, but elderly patients are more likely to have infection with *Proteus*, *Klebsiella*, *Enterobacter*, *Serratia*, *Pseudomonas*, other gram-negative organisms and enterococcus, whereas *Staphylococcus saprophyticus* is not seen. The reasons for the altered microbiology in elderly patients probably include hospitalisation, catheterisation and instrumentation, urinary tract obstruction related to prostatic enlargement in men, bladder prolapse in women, neuropathic bladder in both sexes, and the greater use of antimicrobial agents.

## TREATMENT OF URINARY TRACT INFECTION

Symptomatic urinary infection must be treated with an antibiotic. Asymptomatic bacteriuria is generally a benign condition and is not an indication for antibiotic therapy. There is, unfortunately, no ideal antibiotic for treating UTI in elderly patients.

- *Nitrofurantoin* is a good choice in young patients but should be used with caution in elderly patients as it is ineffective in patients with glomerular filtration rate of less than 30 ml/min. It may cause a partially reversible peripheral neuropathy in those with reduced renal function.
- *Sulphonamides* are effective against *Escherichia*

*coli* but are associated with the emergence of resistant bowel flora.

- *Amoxicillin* is reasonably well absorbed from the gastrointestinal tract and excreted in the urine but affects vaginal flora and can lead to candida vaginitis in up to 25% of women.
- *Trimethoprim* used alone is as effective as the Trimethoprim-sulphamethoxazole combination and is active against most common urinary pathogens. However, it has an effect on vaginal flora and resistance is not uncommon.
- *Cephalosporins* are effective against most urinary pathogens but they tend to be expensive. They also affect vaginal flora.
- The newer *fluoroquinolone* antibiotics (e.g. *ciprofloxacin*) are effective against urinary pathogens including *Pseudomonas aeruginosa* and are available orally. They are ideal for multiple-antibiotic-resistant infections. They are expensive and at present are used excessively as first-line therapy.

Antimicrobial agents can cause vulvovaginal candidosis, hypersensitivity reactions, rashes and gastrointestinal disturbances, all of which can increase morbidity. Limiting treatment to a minimum reduces adverse effects and cost while increasing compliance. A single dose may be effective but is unreliable. It is recommended that 3-day courses be used for managing uncomplicated acute cystitis in women. In men or when urinary tract infection is complicated (Table 6) then a 7-day course should be used. A useful approach in elderly patients is to prescribe *Trimethoprim* 200 mg twice daily for 3 or 7 days or a cephalosporin as a first-line agent. *Ciprofloxacin* is a useful second-line agent but other agents may be chosen in the light of sensitivity tests on failure of first-line therapy.

**Table 6.** Features indicating complicated UTI.

- 
- Instrumentation of the urinary tract
  - Hospital acquired infection
  - Diabetes mellitus
  - Immunosuppressed patients
  - Failure of first-line therapy
  - Symptoms lasting over 7 days
  - Symptoms or signs of upper tract disease
  - Structural anomalies of the urinary tract
  - Urinary calculi
-

**Table 7.** Indications for further investigation of UTI.

- Slow resolution of infection
- Recurrent infections
- Frank haematuria
- Persistent microscopic haematuria
- Acute pyelonephritis
- Suspected renal calculi
- Unusual infecting organism

## RECURRENT URINARY TRACT INFECTIONS

The management of recurrent symptomatic urinary tract infections depends largely on the frequency of recurrence. Further investigation may be indicated as outlined in Tables 7 and 8. If they are infrequent, each new episode should be treated with short course antibiotic therapy, but in the case of frequent or incapacitating symptoms, long-term prophylactic therapy may be indicated. *Trimethoprim* 100 mg daily, *Nitrofurantoin* 50–100 mg daily or *Cefalexin* 125 mg daily are recommended. As a lack of oestrogen in elderly women causes marked changes in vaginal microflora, including loss of lactobacilli and increased colonisation by *Escherichia coli*, an alternative preventative measure is locally applied oestrogen cream. Bacterial prostatitis is not uncommon in older men and the symptoms may be mistaken for urinary tract infection. This requires at least four weeks antibiotic treatment (e.g. *Trimethoprim* or *Erythromycin*) to penetrate tissues adequately. Chronic bacterial prostatitis is probably the commonest cause of relapsing urinary tract infection in men.

In summary, bacteriuria is common in elderly patients. Asymptomatic bacteriuria is benign and is not an indication for antibiotic therapy. Urine culture is not essential for diagnosis before giving first-line therapy in patients with urinary symptoms. Newer diagnostic techniques including leucocyte esterase and nitrite strips and automated culture units are useful but have limitations, especially with lower colony counts.

## RECOMMENDED READING

Stamm, W.E. and Hooton, T.M. (1993) Management of urinary tract infections in adults. *New Engl. J. Med.*, **329**: 1328–1334.\*\*

**Table 8.** Further investigation of UTI (see Table 7 for indications).

- Initial
  - Residual urine
  - Ultrasound of renal tract
  - Rectal examination (PSA if indicated)
  - Cystoscopy if haematuria

Stamm, W.E. (1988) Protocol for diagnosis of urinary tract infection: reconsidering the criterion for significant bacteriuria. *Urology*, **32** (Suppl): 6–12.\*\*

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Pfaller, M.A. and Koontz, F.P. (1985) Laboratory evaluation of leucocyte esterase and nitrite tests for the detection of bacteriuria. *J. Clin. Microbiol.*, **21**: 840–842.\*\*

Stamm, W.E. (1991) Catheter-associated urinary tract infections; epidemiology, pathogenesis and prevention. *Am. J. Med.*, **91**(suppl 3B): 65S–71S.\*\*

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## SELF-ASSESSMENT QUESTIONS

1. Urinary tract infection:
  - a) may be present in elderly subjects without any lower urinary tract symptoms
  - b) can only be accurately diagnosed by urine culture
  - c) urinary nitrite has a high sensitivity and low specificity as a diagnostic test
  - d) proteinuria is a good indicator of infection
  - e) is usually an indication for investigation of the urinary tract
2. Asymptomatic bacteriuria:
  - a) is defined as  $\geq 10^5$  organisms of a two species in three consecutive urine cultures
  - b) is uncommon in elderly men
  - c) may lead to septicaemia in catheterised patients
  - d) is usually an indication for antibiotic therapy
  - e) may be intermittent

## 27. Sexuality and ageing

Karen M. Goodman

(My) ... Age is as a lusty winter  
Frosty, but Kindly.  
Shakespeare (*As You Like It*)

... Do not let Sadness come over you,  
for all your white hairs  
You can still be a LOVER  
Debeauvoir (*The Coming of Age*)

**Sex**, a subject which often generates interest, is generally taboo in clinical discussions. We should not ignore the fact that our patients are sexual beings but should dispel the myth that older people are asexual or have no interest in sex.

“How is Billy going to manage with this in?” asked a lady patient who had been catheterised in order to manage her incontinence. No one had discussed the sexual implications of the procedure with her.

Sexuality encompasses much more than the sexual act. It includes sexual attitudes, behaviour, practices and activity. Sexuality is an integral part of the whole person.

Sex is one of the four primary drives, along with thirst, hunger and avoidance of pain.

### AGE-RELATED CHANGES IN SEXUAL FUNCTION

What happens to sexual activity with advancing age? Despite an age-related decline in sexual activity and drive (Table 1), many couples continue to enjoy a healthy sex life. Surveys suggest that of married couples aged 60 and over, 74% of men and 55% of women are sexually active,<sup>1</sup> and that 63% of men and 30% of women aged between 80 and 102 years of age are sexually active.<sup>2</sup>

### WHY DOES SEX STOP?

Alex Comfort (*Sexuality and ageing*)<sup>3</sup> wrote:

The things that stop you having sex with age are the things that stop you riding a bicycle!

- (a) bad health
- (b) thinking it looks silly
- (c) no bicycle

Reasons why sex stops include:

1. Sexual dysfunction:     erectile disorder  
  ↓ sexual satisfaction  
  less aroused
2. Endocrine problems:     ↓ testosterone  
  hypo/hyperthyroidism  
  ↓ oestrogen in women
3. Systemic:                 heart disease  
  hypertension  
  liver disease  
  anaemia
4. Aesthetic                 not attractive  
   considerations:         deformities
5. Depression  
   (and treatment of)
6. Pain:                     osteoarthritis  
  dyspareunia
7. Medication:             antihypertensives  
  tranquillisers
8. Lack of a partner
9. Use it or lose it:         an active sex life  
  reduces genital  
  atrophy and delays the  
  onset of sexual  
  dysfunction

**Erectile dysfunction** affects:

- ~52% of men aged 40–70 years
- ~95% of men aged >70 years with diabetes mellitus

**Table 1.** Main age-related changes in sexual function.

	Men	Women
Sexual drive	Reduced, less urgent	Reduced, less urgent
Arousal	Increased time to attain erection. Sometimes full erection is not attained until ejaculation occurs.	Increased time to attain arousal. Reduced vaso-congestive response. Lubrication response impaired.
Ejaculation/orgasm	May take longer to achieve. Not consistent—may not occur in some encounters. Reduced seminal volume and force of discharge. Reduced sensation.	May take longer to achieve. Reduced sensation. Less likelihood of multiple orgasms. Uterine contractions may be painful.
Genital changes	Reduced angle of erect penis. Testicular activation reduced or lost.	Atrophy of clitoral hood and labia. Reduced vaso-congestion of vulval structures.
Genital sensation	Reduced penile sensitivity	Clitoral sensitivity may be reduced. Occasionally increased, causing pain on stimulation.
Breast/nipples	N/A Nipple erection may not be impaired.	Reduced or absent vaso-congestion.
Resolution	Rapid loss of erection.	Accelerated.
Refractory period	Prolonged	N/A

**Causes include:**

1. Vascular disease
2. Alcohol/smoking
3. Endocrine disease
4. Renal disease
5. Liver disease
6. Neurological disease
7. Psychiatric illness
8. **Medication**—NSAIDs, digoxin, H<sub>2</sub>blockers, diuretics, antihypertensives, anticonvulsants ... to name but a few

Up to 16% of people on thiazide diuretics may experience erectile dysfunction.

**VIAGRA**

Thirty-five years ago the Pill led the sexual revolution. In 1988 Viagra was launched. In the USA over three and a half million prescriptions have been

dispensed since the Federal Drug Association approved the drug.

In the UK the drug is only available at NHS expense in certain cases, e.g. men with diabetes mellitus, renal failure, multiple sclerosis, Parkinson's disease (others are listed in the British National Formulary).

There are contraindications to giving the drug, which has vaso-constrictive effects. It is inadvisable in pre-existing cardiac conditions where sexual activity would be harmful. A history of recent stroke, hypotension or severe hepatic impairment are also contraindications.

**SEX AND HEART DISEASE**

What should we advise our patients? It is said that if a patient can climb up and down two flights of stairs briskly (13 steps) without symptoms, he or she can have symptom-free sex.

Simple measures that we could institute might

include the prophylactic use of nitrates, optimising the treatment of heart failure with the addition of an ACE inhibitor and advising patients to avoid sex within two hours of a meal.

*Less than 1% of sudden deaths from myocardial infarction occur during sex. 80% of those that occur are due to extramarital sex!*

The incidence of sexual activity causing a myocardial infarction is low, less than 0.9%.

*When is it safe to resume sexual activity following a cardiac event?* After a myocardial infarction the consensus is to wait a month; following a coronary artery bypass graft, when the patient is ready (this is usually limited by chest wall pain); after angioplasty, it is considered safe after 2–3 days.

## AIDS AND THE OLDER PERSON

In 1994 in the USA 10% of the HIV cases reported were in people aged 50 years and over. One to two per cent of the cases reported were in people aged over 65. The risk factors in the older person are both homosexual and bisexual behaviour. The most common presentation of the AIDS index illness is progressive multi-focal leucoencephalopathy dementia, which can be manifest by focal motor weakness, gait abnormalities, speech disorders and neuro-ophthalmic symptoms.

## WHAT IS OUR ROLE AS HEALTH PROFESSIONALS?

- Initially we have to feel comfortable about discussing the sexual needs of the older person.
- We should be aware of how our treatments will affect the sexual function of our patient, e.g. the prescription of medication; insertion of catheters.
- When we discuss the implications of the chronic illness of a patient we should consider including the impact of their stroke or heart disease on their sex lives.
- Aside from the hospital setting; nursing/residential homes need to provide some privacy for their clients, e.g. private visiting areas where couples can be together, double rooms for resident couples.

- Exhibition of sexual acts should not be reprimanded but perhaps encouraged to continue in a private facility.

*Finally, remember that the need for love and intimacy does not decline with age but remains part of an older person's appreciation of him or herself as a total human being.*

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## SELF-ASSESSMENT QUESTIONS

1. Which of these drugs has the potential to affect sexuality negatively?
  - a) Antacids
  - b) Antispasmodics
  - c) Mild analgesics
  - d) Anticoagulants
  - e) Antihypertensives.
2. You notice that two residents in the ward/home you work in seem to be striking up a liaison. You should:
  - a) encourage this
  - b) allow it to take its own course
  - c) put a stop to it before it goes too far
  - d) discuss it with the team to decide if it's suitable or not
  - e) report it to their next of kin and let them decide.



## 28. Management of osteoporosis

Roger M. Francis

### DEFINITION

Osteoporosis is characterised by a reduction in the amount of bone in the skeleton, associated with skeletal fragility and an increased risk of fracture after minimal trauma. The major osteoporotic fractures are those of the forearm, vertebra and hip, but the incidence of fractures of the humerus, pelvis and ankle also increases with advancing age.

### IMPACT OF OSTEOPOROTIC FRACTURES

- 50,000 forearm fractures, 40,000 symptomatic vertebral fractures and 60,000 hip fractures occur in the UK each year.
- Lifetime risk of symptomatic fracture for a 50-year-old white woman in the UK is 13% for the forearm, 11% for the vertebra, and 14% for the hip. Corresponding figures for a 50-year-old man are 2%, 2%, and 3%.
- Excess mortality after hip fracture of 15–20%, related to fracture and subsequent surgery. Similar excess mortality after symptomatic vertebral fracture, due to associated conditions.
- Up to 50% of patients more dependent and less mobile after hip fracture, many requiring placement in a residential or nursing home.
- Annual cost of osteoporotic fractures in the UK estimated at £942 million, of which 87% is attributable to hip fractures.

### PATHOGENESIS OF OSTEOPOROSIS AND FRACTURES

Risk of fracture is determined by bone mineral density (BMD), trabecular architecture, skeletal

**Table 1.** Determinants of peak bone mass and subsequent bone loss.

Peak Bone Mass	Bone Loss
Heredity	Menopause
Exercise	Smoking and alcohol
Dietary calcium	Physical inactivity
Age at puberty	Vitamin D insufficiency

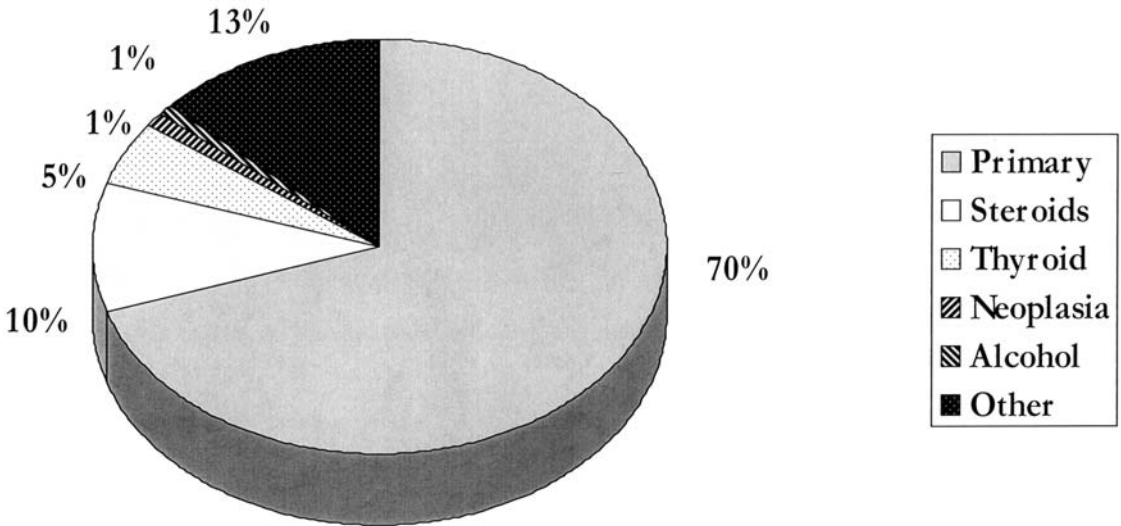
geometry, bone turnover, postural instability and propensity for falling. BMD is influenced by peak bone mass at maturity and subsequent bone loss (Table 1). Bone loss starts between the ages of 35 and 40 in both sexes, with an acceleration of bone loss in the decade after the menopause in women. Bone loss then continues into the ninth decade of life in both men and women.

There are a number of secondary causes of osteoporosis, which are found in 30% of women and 55% of men with symptomatic vertebral crush fractures (Figure 1). Secondary causes of osteoporosis, such as oral corticosteroid therapy, anticonvulsant treatment, thyroid disease and male hypogonadism, have also been identified as risk factors for hip fractures. The risk of hip and other non-vertebral fractures is also increased by conditions predisposing to falls, such as stroke disease, parkinsonism, dementia, vertigo, alcoholism and visual impairment.

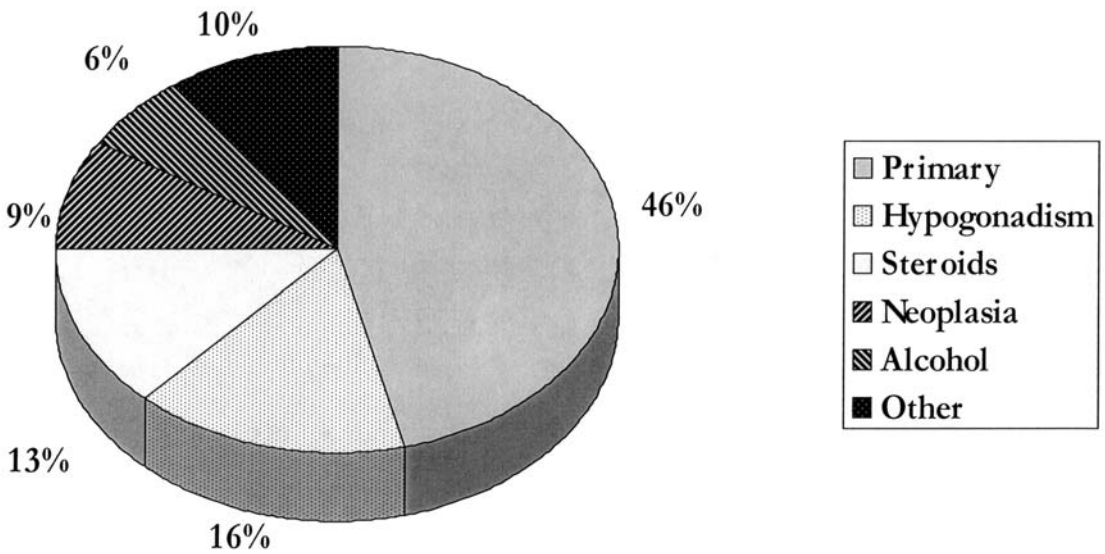
### DIAGNOSIS OF OSTEOPOROSIS

Osteoporosis was until recently a clinical diagnosis, based on the development of fractures after minimal trauma. With the advent of dual energy X-ray absorptiometry (DXA) bone densitometry,





(a)



(b)

**Figure 1.** Prevalence of secondary causes of osteoporosis in women (a) and men (b) with symptomatic vertebral fractures attending the Bone Clinic in Newcastle upon Tyne.

osteoporosis is increasingly used to describe reduced bone density before fractures have occurred.

BMD measurements may be expressed as standard deviation units above or below the mean

value for normal young adults or relative to the mean value for control subjects of the same age, to give T and Z scores respectively. The World Health Organisation (WHO) has defined osteoporosis as a BMD 2.5 standard deviations or more below the

mean value for young adults (T score < -2.5). The WHO definition does not necessarily represent a threshold for treatment, as up to 70% of women above the age of 80 years have a T score < -2.5, but only a proportion of these will sustain an osteoporotic fracture. It may therefore be more appropriate to use Z scores in interpreting BMD measurements in older people, to identify individuals whose bone density is lower than expected for their age and who are at greater risk of osteoporotic fractures.

Although a number of indications for BMD measurements have been suggested, the relevance of these indications in older people remains uncertain. Spine bone density measurements may also be spuriously elevated in this age group, because of aortic calcification and spondylosis. Pragmatic suggestions on appropriate indications for bone density measurement in older people are provided in Table 2. BMD measurements are of limited value in the assessment of frail patients with hip and other fractures, as most will have reduced bone density and the results are unlikely to influence management. Prolonged oral steroid therapy has also been excluded from the list of indications for bone density measurement, as a UK Consensus Group has recently recommended that all people over the age of 65 years on 7.5 mg prednisolone or more daily should be offered treatment for osteoporosis.

## INVESTIGATION

Specific treatment of underlying causes of secondary osteoporosis such as male hypogonadism, primary hyperparathyroidism and hyperthyroidism leads to large increases in bone density, so these conditions should be sought in patients with osteoporosis and/or fractures after minimal trauma by careful history, physical examination and appropriate investigation (Table 3). Serum 25 hydroxyvitamin D (25OHD) and intact parathyroid hormone (PTH) measurements may be useful in excluding vitamin D deficiency and secondary hyperparathyroidism in patients with limited sunlight exposure, previous gastric resection, malabsorption or anticonvulsant treatment. These measurements are probably unnecessary if calcium and vitamin D supplementation is planned, as the results are unlikely to influence management.

**Table 2.** The use of bone density measurement in older people.

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### Indications for BMD measurement:

- Fractures after minimal trauma in previously fit individuals.
- Past history of early menopause (<45 years) in women up to the age of 70 years.
- Underlying secondary causes of osteoporosis.
- Apparent osteopenia on X-ray.

### Treatment for osteoporosis justified without BMD measurement:

- Fractures after minimal trauma in frail individuals.
  - Prolonged oral steroid therapy (>7.5 mg prednisolone/day).
- 

## GENERAL MEASURES

All patients with osteoporosis and fractures should be given advice on lifestyle measures to decrease further bone loss and reduce the risks of falls, including eating a balanced diet rich in calcium, moderating tobacco and alcohol consumption and maintaining regular physical activity and exposure to sunlight.

## DRUG TREATMENT

As bone loss continues into old age in both men and women, specific treatment for osteoporosis should be considered in all patients with osteoporotic fractures. Unfortunately, most studies of the treatment of established osteoporosis have only recruited women up to the age of 75 or 85 years with vertebral fractures. No secondary prevention studies of the treatment of osteoporosis in older patients with vertebral and hip fractures have yet been published, but there is no evidence of an attenuated response to treatment with advancing age. Furthermore, treatment of osteoporosis is likely to be more cost-effective in older people, because of their higher fracture rate.

The Royal College of Physicians has recently published updated guidelines on the management of osteoporosis. Their recommendations are graded on the levels of evidence for each therapeutic intervention. Grade A recommendations are based on randomised controlled trials, whereas Grade B recommendations result from controlled studies

**Table 3.** Investigations for secondary osteoporosis.

Investigation	Finding	Possible Cause
Full blood count	Anaemia	Neoplasia or malabsorption
	Macrocytosis	Alcohol abuse or malabsorption
ESR	Raised ESR	Neoplasia
Biochemical profile	Hypercalcaemia	Hyperparathyroidism or neoplasia
	Abnormal liver function	Alcohol abuse or liver disease
	Persistently high alkaline phosphatase	Skeletal metastases
Thyroid function tests	Suppressed TSH; high T <sub>4</sub> or T <sub>3</sub>	Hyperthyroidism
Testosterone, SHBG, LH, FSH	Low testosterone or free androgen index with abnormal gonadotrophins	Hypogonadism
Serum and urine electrophoresis (Patients with vertebral fractures)	Paraprotein band	Myeloma

without randomisation, studies with a quasi-experimental design and epidemiological studies. Several treatments have been shown to increase BMD and decrease the risk of vertebral and hip fractures (Table 4).

### Hormone Replacement Therapy (HRT)

Small studies in women with osteoporosis (mean age 65–68 years) show that HRT increases spine bone density by about 5% and decreases vertebral fractures by 60%.

*Advantages: Inexpensive (generally <£100/year), controls vasomotor and urogenital symptoms, may decrease the risk of ischaemic heart disease and Alzheimer's disease.*

*Disadvantages: Vaginal bleeding and risk of venous thromboembolism and breast cancer.*

*Appropriate Use: Most useful in younger (<70 years) postmenopausal women with osteoporosis.*

### Raloxifene

Raloxifene (Evista) is a selective oestrogen receptor modulator (SERM), which has oestrogen agonist actions on the skeleton and lipid profile, but acts as an oestrogen antagonist on the breast and endometrium. In a large study of 7,705 postmenopausal women aged 31–80 years with osteoporosis, raloxifene increased lumbar spine and femoral neck bone density by 2–3%, reduced the risk of vertebral fractures by 30–50% and decreased the incidence of breast cancer by 76%.

**Table 4.** The effect of drug treatment on bone density and the incidence of vertebral and hip fractures in the management of osteoporosis. Grading of recommendations adapted from the updated Royal College of Physicians Clinical Guidelines for Prevention and Treatment of Osteoporosis.

	Bone Density	Vertebral Fractures	Hip Fractures
Oestrogen	A	A	B
Raloxifene	A	A	–
Alendronate	A	A	A
Risedronate	A	A	A
Etidronate	A	A	B
Calcitonin	A	A	B
Calcium ± Vitamin D	A	A	A

*Advantages: Raloxifene causes no vaginal bleeding and decreases the risk of breast cancer.*

*Disadvantages: Expensive (£258/year), risk of venous thromboembolism, no evidence of reduction in non-vertebral fractures.*

*Appropriate Use: Useful in women with vertebral osteoporosis concerned about their risk of breast cancer.*

## **Bisphosphonates**

Intermittent cyclical etidronate therapy (Didronel PMO) has been shown to increase spine bone density by 5% and reduce the incidence of further vertebral fractures by about 60% in women with vertebral osteoporosis. Cyclical etidronate also increases femoral neck bone density, but there are no interventional studies investigating the effect of treatment on hip fracture incidence.

*Advantages: Moderate cost (£163/year), generally well tolerated.*

*Disadvantages: Complicated cyclical regimen, has to be taken on an empty stomach, theoretical risk of mineralisation defect, less effect on the hip than alendronate.*

*Appropriate Use: Useful in women with vertebral osteoporosis up to the age of 75 or 80 years. Also licensed for prevention and treatment of corticosteroid-induced osteoporosis.*

Continuous alendronate (Fosamax) increases bone density in the forearm, spine and femoral neck and decreases the incidence of fractures at these sites by about 50%. In a study in 2,027 women with osteoporosis aged between 60 and 85 years, alendronate was as well tolerated and effective in increasing bone density in women above the age of 70 years as in younger women.

*Advantages: Proven to be effective at major fracture sites in large well-designed studies.*

*Disadvantages: Expensive (£301/year), complex instructions on administration to reduce risk of oesophageal side effects, has to be taken on an empty stomach.*

*Appropriate Use: Useful in older women (up to the age of 85 years) with osteoporosis at any site. Studies show it may be useful in male and corticosteroid-induced osteoporosis.*

Risedronate (Actonel) has also recently been shown to increase bone density in the lumbar spine and femoral neck and to decrease the incidence of vertebral and hip fractures in women with osteo-

porosis. It also appears to be well tolerated, even in women with gastrointestinal disease.

*Advantage: Shown to reduce vertebral and hip fractures in large well designed studies.*

*Disadvantages: Expensive (£284/year), complex instructions on administration, has to be taken on an empty stomach.*

*Appropriate Use: Useful in older women with osteoporosis at any site. Also useful in the management of corticosteroid-induced osteoporosis.*

## **Calcitonin**

Calcitonin is a potent antiresorptive agent, with a rapid but short-lived effect on osteoclast function. A study in postmenopausal women with vertebral fractures (mean age 68 years) demonstrated that cyclical IM calcitonin and oral calcium supplements decreased the incidence of vertebral fractures by 60%. In a larger study of 1,255 women with established osteoporosis, intranasal calcitonin increased bone density marginally, but although there was a 36% reduction in new vertebral fractures with the 200 iu dose, there was no significant decrease in fractures with 100 or 400 iu/day.

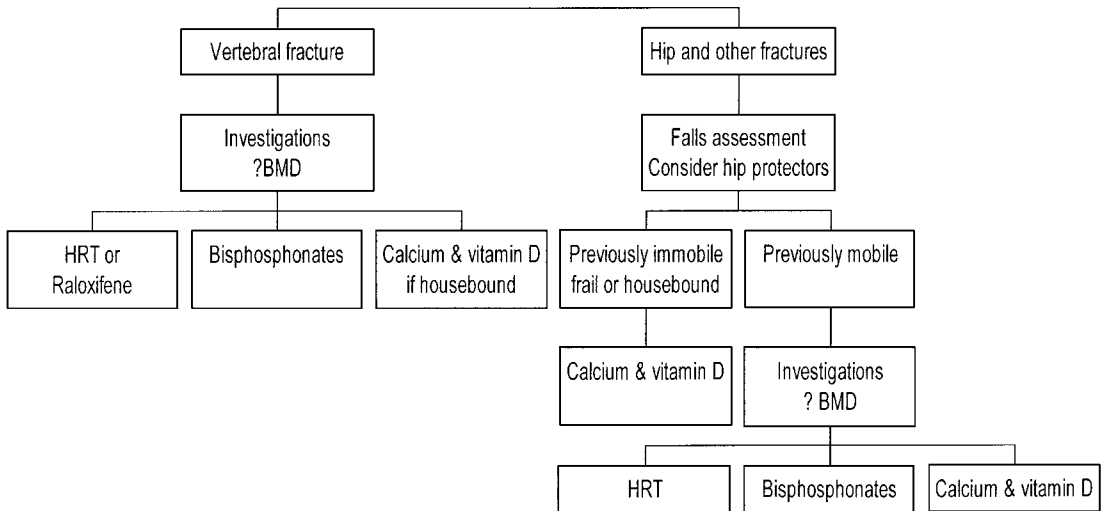
*Advantages: Possible analgesic effect of calcitonin.*

*Disadvantages: Expensive (>£1,000/year for IM calcitonin), intranasal preparation not yet available in the UK, inconsistent fracture data.*

*Appropriate Use: May be useful for the short-term management of acute vertebral fractures.*

## **CALCIUM AND VITAMIN D**

Calcium and vitamin D supplementation may be the most appropriate treatment for frail elderly patients with osteoporosis, as vitamin D deficiency and secondary hyperparathyroidism cause bone loss with advancing age. A French study in 3,270 women (mean age 84 years) living in nursing homes and apartment blocks for the elderly showed that 800 iu vitamin D<sub>3</sub> and 1.2 g elemental calcium daily decreases PTH, increases femoral neck BMD and reduces the risk of hip fracture by 27%. A smaller American study of 389 older men and women (mean age 70 years) living at home demonstrated that 700 iu vitamin D<sub>3</sub> and 500 mg elemental calcium daily had a modest beneficial effect on bone density and decreased the incidence of non-vertebral fractures by 54%. It is unclear if the



**Figure 2.** Algorithm of the management of older patients with osteoporotic fractures.

benefits of treatment seen in these studies were due to vitamin D, calcium or the combination of both.

*Advantages: Inexpensive (<£100/year), well tolerated.*

*Disadvantages: Not definitely proven to be effective in older people with fractures.*

*Appropriate Use: Useful in frail or housebound patients with osteoporosis, who are likely to have vitamin D insufficiency and secondary hyperparathyroidism.*

## REDUCING FALLS

All patients with hip and other non-vertebral fractures should ideally undergo a falls assessment. Intrinsic causes of falls should be sought by history, examination and review of medication, whereas extrinsic causes may be identified from the history and home visit. In older patients with unexplained falls or syncope, tilt testing may also be useful.

A number of randomised controlled trials have assessed the effect of modifying risk factors for falling, although the results have not all been consistent. In an American study of 301 older patients with an apparent risk factor for falling, the intervention group underwent geriatric assessment, with modification of risk factors for falling, whereas the control group had the usual healthcare

and social visits. Over the 12 months' follow-up period, 35% of the intervention group had falls compared to 47% in the control group. A more recent British study examined the effectiveness of a detailed medical and occupational therapy assessment in 397 older patients presenting to an Accident and Emergency department with a fall. There was a significant 61% reduction in the risk of falls in the intervention group over 12 months, compared with the control group. Although both studies showed a significant decrease in falls, neither had the statistical power to detect a meaningful reduction in fracture incidence.

## DECREASING IMPACT OF FALLS

An alternative approach to fracture prevention is to decrease the impact of falls using external hip protectors, which are incorporated into specially designed underwear. A Danish study block randomised 665 nursing home residents to receive external hip protectors or to serve as controls. Over the 12-month study there was a reduction in hip fracture risk of over 50% in those using the hip protectors. Although this is potentially one of the most promising interventions for the prevention of hip fractures, external hip protectors are generally bulky and uncomfortable.

## MANAGEMENT OF THE INDIVIDUAL PATIENT

A practical approach to the management of older patients with osteoporotic fracture is shown in Figure 2. Measures to decrease bone loss and reduce the risk of falls should be advocated in all patients and the use of external hip protectors considered in those who continue to fall. Older patients with osteoporotic fractures fall into two broad groups, which may modify the approach to management. The first group comprises mainly elderly, frail patients, many of whom were immobile or housebound before fracture. Patients in the second group are generally younger and were previously mobile and independent.

Patients in the first group have limited life expectancy, so it is probably inappropriate to perform extensive investigations to exclude secondary causes of osteoporosis or to request bone density measurements. These patients may benefit more from calcium and vitamin D supplementation than other therapeutic interventions, as they are likely to have vitamin D deficiency.

Patients in the second group would benefit from more active investigation and therapeutic intervention, as life expectancy and quality of life may be improved by decreasing the risk of further fractures. It is therefore recommended that investigations to exclude secondary causes of osteoporosis are performed in this group. Bone density measurements should also be considered, to target the more expensive treatments on those at highest risk of further fracture. The choice of treatment will depend a number of factors, including biological age, cognitive function, likely compliance and patient preference.

## COMPONENTS OF AN OSTEOPOROSIS SERVICE

- Enthusiastic Lead Clinician (Essential!)
- Osteoporosis Specialist Nurse (Useful)
- Management protocols
- Biochemical and Haematological support
- Good liaison with Orthopaedic Department
- Access to DXA bone density measurements
- Access to Falls Clinic with tilt table

## RECOMMENDED READING

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## PATIENT SUPPORT

Information for patients and healthcare professionals is available from the National Osteoporosis Society, PO Box 10, Radstock, Bath, BA3 3YB.

## SELF-ASSESSMENT QUESTIONS

*True or false?*

Osteoporosis:

1. Commonly causes back pain in the absence of vertebral fractures.
2. Costs the UK nearly one billion pounds annually.
3. Is characterised by impaired mineralisation of osteoid.
4. Is an inevitable consequence of the ageing process.



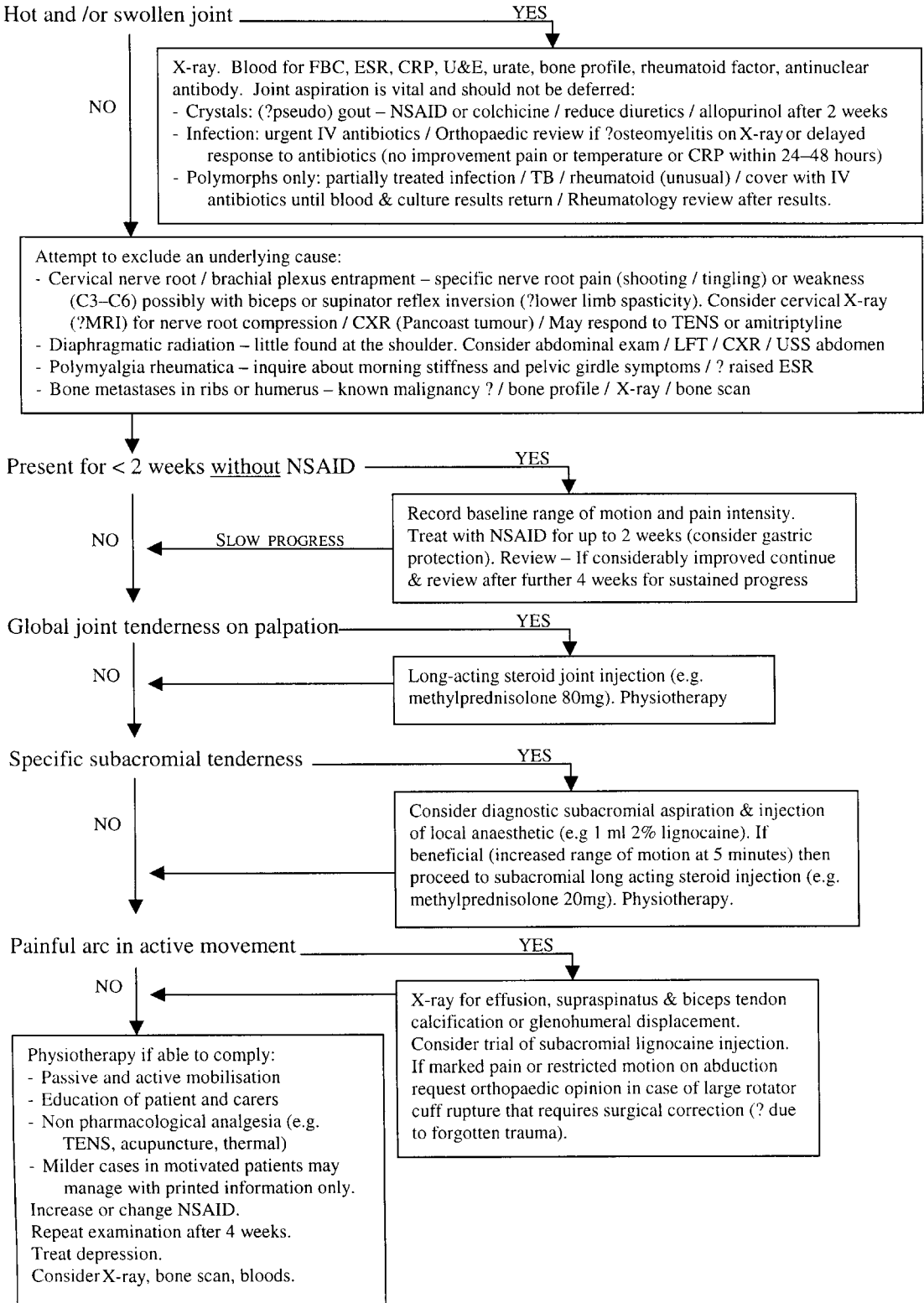
## 29. Painful stiff shoulder after stroke

Christopher I.M. Price

All features in the table below may coexist. Consider treatment for each in turn as well as for a stiff shoulder (see Figure 1 overleaf). All management decisions should be made in conjunction with the attending physiotherapist.

Clinical syndrome	Pain description	Clinical features	Simple management
<p>“Subluxation”</p> <p>Usually inferior, but can be superior (possible rotator cuff tear) or anterior-inferior (possible pectoral muscle spasticity)</p>	<p>Mechanical ache.</p> <p>Varies with (sleeping) position.</p> <p>NB—subluxation without pain is common and may not require intervention other than careful handling.</p>	<p>Palpable subacromial space.</p> <p>Muscle tone may be low or high.</p> <p>Indicates a shoulder susceptible to all causes of pain.</p>	<p>Simple analgesia, education &amp; positioning.</p> <p>Chair arm supports (slings/cuffs restrict movement, may not alter position, and may impede recovery, but can be a last resort for difficult pain).</p> <p>Superior elastoplast strapping of glenohumeral joint (for stability, particularly at night).</p> <p>Electrical stimulation.</p>
<p>“Spasticity”</p>	<p>Painful spasms.</p> <p>Worse with cold, stress.</p> <p>Upper limb position may make dressing and hygiene difficult.</p>	<p>Increased resistance to passive elbow flexion/shoulder abduction.</p> <p>Hypereflexia.</p> <p>Classic hemiplegic posture may be adopted.</p>	<p>Positioning, orthoses, warmth.</p> <p>Consider antispasticity drugs if several muscle groups affected (but beware loss of muscle strength and mobility).</p> <p>Referral for botulinum injection.</p>
<p>“Sudeck’s atrophy” also known as:</p> <p>Reflex sympathetic dystrophy syndrome (RSDS)</p>	<p>Constant deep discomfort.</p> <p>May report limb flushing or freezing.</p>	<p>Arm mottled/atrophic/cold/flushed.</p> <p>Tender MCP joint compression.</p>	<p>Trial of amitriptyline up to 75 mg for 4 weeks.</p> <p>Consider pain specialist review.</p>
<p>“Thalamic pain” also known as:</p> <p>Central post-stroke pain (CPSP)</p>	<p>“Ice burning”. Worse with stress, light touch, or repeated touch. Starts 1–3 months after stroke (but can be much later).</p>	<p>Pain is within an area of pin-prick and/or temperature sensory loss. (Test simply with pin/finger and cold/warm metal such as a spoon).</p>	<p>Trial of amitriptyline up to 75 mg for 4 weeks. If fails try gabapentin 900 mg.</p> <p>TENS.</p> <p>Consider pain specialist review.</p>





**Figure 1.** Scheme to guide basic management of a painful stiff shoulder in the absence of systemic arthropathy or trauma.

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## 30. Foot disorders

Barbara Wall

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Points to remember:

- Each foot has 26 bones and 30 synovial articulations.
- During a lifetime the average individual will walk about 70,000 miles.
- With each step mechanical forces exert the equivalent of five times one's body weight through both feet.

It is easy to disregard the feet when assessing older people who have multi-system pathologies. This is a serious oversight. A elderly person with diabetes mellitus who has a neglected foot ulcer, and old people who are housebound because their toe nails are too long to let them wear shoes, are examples familiar to podiatry. These situations are preventable and inexcusable.

Never consider foot problems in isolation. The performance of the foot and leg is intimately related to normal functioning of proximal joints, and intact neuro-muscular system and cardiovascular system.

- Pathology of the spine, hip, knee, ankle and proximal anatomical structures may compromise foot function during walking.

In the older person, the protection afforded by the skin is diminished: the stratum corneum, the outermost layer of the epidermis, has an altered lipid content which reduces its normal barrier action. With ageing, abnormal elastic and collagen fibres form in the dermis. Thus both the epidermis and dermis are liable to damage, and their normal protective functions are impaired (Figure 1).

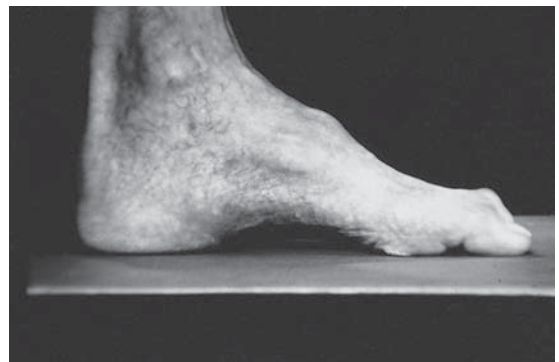
Ageing affects the mechanical properties of bone: in the foot, pathological fractures can occur when bones are subjected to abnormal forces.

These can result from altered gait, caused by osteoarthrosis of the hip or knee for example.

### THE FOOT IN SYSTEMIC DISEASES

Systemic diseases associated with advancing age can have a direct impact on foot health and function. Let us consider some examples:

1. Rheumatoid arthritis affects joints in the feet. This disease can also compromise tissue viability and wound healing. Consider the patient with rheumatoid disease affecting the feet: involvement of the knee joint generates abnormal mechanical forces and exacerbates foot deformity. The disease may impair tissue viability, so tissue necrosis and ulceration may follow—unless treatment redirects abnormal



**Figure 1.** This photograph shows the general effects of ageing on the foot. Note the atrophy of the protective subcutaneous tissue under the metatarsal heads and heel (which normally provides shock absorption). The epidermis is thin and liable to damage, the toes are clawed and are prone to trauma. This foot is vulnerable and must be treated with respect.

mechanical stress away from the affected joints. Disease-modifying drugs can increase a person's susceptibility to infection and ulceration.

2. Reduced arterial blood supply renders the skin and soft tissues of the feet vulnerable to damage. Once damage has occurred, ischaemia reduces the rate of healing. It is important to recognise the signs and symptoms indicative of lower leg and foot ischaemia so that the problem is identified early and preventative measures taken.
  - Intermittent claudication and rest pain.
  - The foot is cool and the skin appears atrophic. Pallor of the foot and leg develop on elevation.
  - Absent foot pulses (dorsalis pedis and posterior tibial pulses) with an ankle brachial systolic pressure index <0.9 (the normal ABPI should be 1.0, or slightly higher—any 'grey area' readings can be clarified by calculating ABPIs after exercise and taking into account clinical signs and symptoms). (See chapter on leg ulcers by Cheesbrough.)
  - Ulceration and gangrene.

### 3. Diabetes mellitus

Some important facts about diabetes mellitus:

- 4% of all hospital beds in the United Kingdom are occupied by patients who have diabetes.
- Over a quarter of these admissions are specifically for foot complications.
- 15% of people with diabetes have foot ulcers.
- 84% of lower leg amputations are preceded by ulcers.
- More hospital beds are occupied by diabetic patients with foot problems, than by diabetic patients with all the other complications of the disease combined.
- 50% of non-traumatic amputations of the lower limb occur in patients with diabetes mellitus.

**In diabetes mellitus most foot-related problems are PREVENTABLE.**

Foot care advice for people with diabetes mellitus:

- Please look at your feet regularly (every day is best).
- Look out for any areas of **DISCOLORATION** or **SWELLING**.
- Also, look out for any build-up of hard skin (callosities and corns).
- If you notice any of these consult your doctor/nurse or State Registered Podiatrist, particularly if there appears to be discoloration under the build-up of hard skin.
- If you notice any open cuts or sores, cover them with a sterile/clean dressing.
- A hand mirror can help you examine under your feet.
- Please do not try to remove hard skin yourself. If your toenails are very tough, it is best to let a State Registered Podiatrist trim them for you.
- If your skin is very dry, use a cream (for example, E45 or aqueous cream) daily. The best time to apply cream is after washing and drying your feet.
- When you wash your feet, use a mild soap and check that the water is not too hot (if your feet are numb, a thermometer can be used to check the temperature of the water which should be no more than 40°C).
- When drying your feet be careful to dry between the toes, otherwise cracking may occur that can allow infection in.

**IF YOU HAVE ANY WORRIES OR ANY PROBLEMS REGARDING YOUR FEET CONTACT A STATE REGISTERED PODIATRIST, YOUR DOCTOR, NURSE OR HEALTH CARE PROFESSIONAL.**

Diabetes mellitus directly affects the feet and can cause foot ulceration. The complications of the disease include ischaemia, peripheral neuropathy and infection. A reduction in the morbidity associated with diabetic foot disease would occur if there was better education of patients, carers and health professionals. Its importance cannot be overemphasised.

In diabetes, neuropathy (neuroischaemia) can mask ischaemic pain and calcification of arteries can make ankle brachial systolic pressure ratios inaccurate and meaningless.

Peripheral neuropathy affects more than 50% of diabetic patients over 60 and causes motor, sensory and autonomic nerve dysfunction.

*Motor nerve damage* may result in deformity of the toes, leading to altered mechanical forces and



**Figure 2.** An example of a neuropathic joint (Charcot joint). The patient has sensory and autonomic neuropathy. The tarsal joints have collapsed and a large neuropathic ulcer has developed because of excessive pressure.

trauma to the skin and underlying tissues. If shoes are incorrectly fitted, deformed toes can become traumatised, causing blistering and ulceration.

*Sensory neuropathy* reduces the person's ability to appreciate protective warning signs of damage. *Autonomic neuropathy* makes the skin dry because sweating is reduced. Arterio-venous shunting, associated with autonomic dysfunction, allows blood to be diverted through thermo-regulatory arterio-venous shunts at the expense of perfusing superficial nutritive capillaries. A further effect of autonomic neuropathy is the development of a highly destructive arthropathy—Charcot joints (Figure 2).

Infection may be a consequence of ischaemia, neuropathy and altered white blood cell function. Infection is particularly serious in patients with diabetes and must be treated aggressively.

The impaired vision associated with diabetes (and other age-related diseases) can limit the person's ability to examine their feet for signs of infection and damage.

#### 4. Stroke

Foot disorders can complicate stroke. A Circumductory gait results in pressure areas on the foot, which can ulcerate and become infected. Stroke may cause immobility, which may result in



**Figure 3.** Onychomycosis. The affected nail plates appear thickened and friable. The bulk of the nail can cause necrosis of the underlying nail bed.

pressure sores over vulnerable areas such as the heels and malleoli.

## LOCAL FOOT PROBLEMS

### Toenails

Toenail problems are common in elderly people.

Changes in the structure of the nail are associated with advancing age. Over the years mechanical forces alter the nail matrix and the nail bed: both these structures contribute to the growing nail plate. Nail plates can become hypertrophied and distorted (onychogryphosis). Unless the nails are reduced in thickness, the pressure exerted by the nail plate causes necrosis and ulceration of the underlying nail bed.

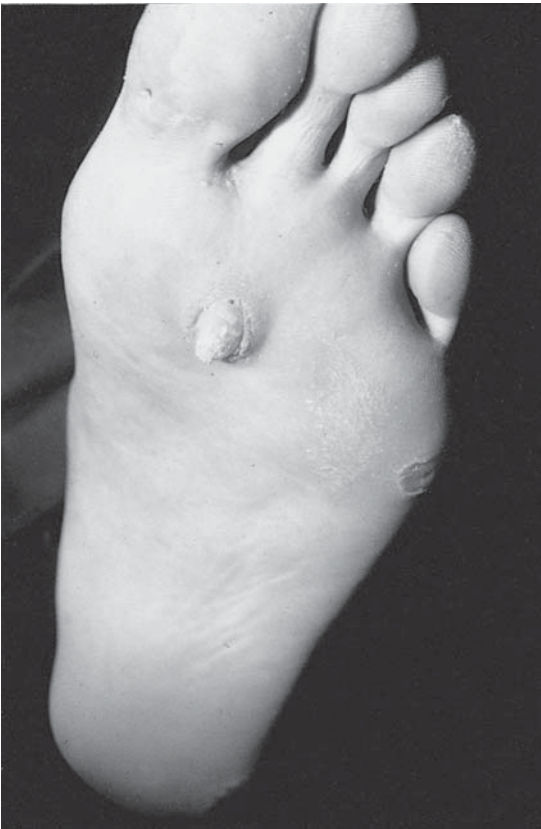
Fungal infection of the nail (onychomycosis) can also cause hypertrophy (Figure 3). Once the diagnosis has been confirmed by laboratory tests, treatment can begin, either by applying fungicidal paints or sprays directly to the nail plate, or (unless contraindicated) by systemic antifungal drugs. The nail plate must be reduced in thickness to allow penetration of any topical agent, and to help prevent subungual necrosis and ulceration.

It is important that toenails are cut straight across and not cut down the side which can let splinters of nail damage the soft tissues of the nail sulcus, allowing infection to develop (onychocryptosis).

- The treatment for corns and callous is reduction or elimination of the mechanical stresses responsible for the hyperkeratinisation. **CORN AND CALLOUS PLASTERS OFTEN CONTAIN CAUSTICS. AVOID THEM.**

### Skin Conditions

The skin responds to abnormal mechanical stresses by producing hypertrophied stratum corneum (hyperkeratinisation). This presents clinically as corn and callosity; if stresses causing these skin changes are not dissipated, tissue necrosis will occur under the hyperkeratotic plaques and ulceration will follow (Figure 4).



**Figure 4.** A large plantar corn under the 2nd metatarsal head. Another area of hyperkeratosis under the 5th metatarsal head has been reduced by a podiatrist. The skin responds to abnormal mechanical stresses by producing hypertrophied stratum; if stresses causing these skin changes are not redistributed, tissue necrosis can occur under the hyperkeratotic plaques, and ulceration may follow.

Corn ‘cures’ are not recommended as they do not address the cause. These ‘cures’ often contain acids (e.g. salicylic acid) which macerate the epidermis, allowing entry to microorganisms. Corns and callous should be treated by a State Registered Podiatrist.

Elderly skin tends to be dry. It is important that areas of very dry skin, for example around the heel, are not allowed to fissure, or pathogens will enter the dermis and cause infection (Figure 5). Emollient creams should be used after bathing to rehydrate the skin. Maceration and fissuring can affect the skin between the toes. These ‘wet’ fissures are frequently infected by fungi which exacerbate the condition of the skin. Fissures also allow the entry of pathogenic microorganisms. After washing, it is important to dry between the toes. Surgical spirit painted between the toes can help treat maceration.



**Figure 5.** Fissuring around the periphery of the heel caused by very dry skin and mechanical shearing stresses. Unless the fissures are treated, pathogens will gain entry to the dermis and cause infection. Emollient creams should be used after bathing to rehydrate the skin.

Do note the signs and symptoms of spreading infection—cellulitis, lymphangitis and lymphadenitis—and treat it urgently. If the signs occur on the dorsal aspect of the foot, examine the interdigital spaces. These are often the site of infection.

Moles, particularly on the sole of the foot, should be inspected for signs of change (for example, increase in size, uneven pigmentation, ulceration, bleeding or pain). If in any doubt, refer urgently to a dermatologist.

### Toe Deformities

Common toe deformities found in older people include hallux abducto valgus, hammered, clawed and retracted toes. These conditions expose prominent joints to abnormal mechanical forces. The overlying skin then develops corns and callosities. Sometimes joints become fixed by osteoarthritis and the deformities are amenable only to surgical correction. If surgery is contraindicated, protective padding and orthoses can be used. These deflect stresses away from the prominent areas, and ‘replace’ the shock absorbing fibro-fatty tissue that is normally found on the plantar aspect of the foot, but which atrophies with age.

### FOOTWEAR

Regardless of a person’s age, and whatever structural changes have occurred in their feet, the shoes should fit properly.

In the older person, specialist footwear is sometimes needed to accommodate deformed joints, or to prevent trauma to neuropathic feet. In some cases, modifications can be made to ‘off the shelf’ shoes by a State Registered Podiatrist.

- Slippers are not encouraged—they are often ill fitting and can result in falls.

Some foot problems, especially those perceived as relatively minor (such as corns and dystrophic

toenails), can cause pain, immobility and lack of independence. Many are amenable to simple treatment. The state registered podiatrist will be able to help and advise on all aspects of foot care: however, all professionals involved with elderly people should recognise important foot problems and refer patients early for podiatry.

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### SELF-ASSESSMENT QUESTIONS

1. Corns and callosities are:
  - a) caused by excessive mechanical stresses
  - b) caused by an infection
  - c) best treated using proprietary corn plasters
  - d) unrelated to age-related changes in tissues
2. Diabetes mellitus:
  - a) has no effects on the feet
  - b) is responsible for 50% of non-traumatic amputations of the lower limb
  - c) is associated with unpreventable foot complications
  - d) is not associated with neuroarthropathy





# 31. Cancer in old age

**Margot Gosney**

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The most commonly asked questions about cancer in older people are:

- Is cancer a common problem in older people?
- Will practising geriatricians see older patients with cancer?
- Is the epidemiology of cancer in older people changing?
- Is screening for cancer appropriate for older people?
- Should older patients with cancer be investigated and managed in a similar way to younger subjects?
- Can the survival differences seen in younger and older groups be explained?

The answer to all of these questions is “yes”. Our knowledge about cancer and older people is patchy and incomplete. We do know that in considering older patients with cancer:

- There is more diagnosed comorbidity<sup>1,2</sup>
- They are less likely to participate in screening<sup>3</sup>
- They are less likely to be investigated<sup>4,5</sup>
- They are less likely to have a definitive histopathological diagnosis<sup>6</sup>
- They are more likely to have advanced local disease at presentation<sup>7</sup>
- They are more likely to have metastatic disease at presentation<sup>8</sup>
- They are less likely to undergo therapy, both palliative and curative<sup>9-13</sup>
- Chemotherapy and radiotherapy have their own specific problems in older patients<sup>14</sup>
- The only report of the elderly patient with cancer may be the death certificate
- They have reduced survival.

Cancer is the main cause of death in the United Kingdom, with 156,890 deaths recorded in 1995. As the incidence and prevalence of cancer has

increased over the past five years it has overtaken heart disease as the leading cause of death. Additionally, over half of all cancer will occur in patients aged 70 years or above—a good reason for geriatricians to know about the investigation and management of such patients. In this chapter I will deal with five common tumours: colon and lung cancer (common tumours in both men and women), breast and ovary (as related to older women), and prostate cancer (specific to older men).

## COLON

Colorectal cancer accounts for about 10% of all cancer registrations and is the second most common malignancy (after lung cancer). The cumulative lifetime risk of developing colon cancer is 1:40 for men and 1:48 for women. About 25,000 cases of colorectal cancer were registered in 1997 in England and Wales. The incidence rises sharply with age, with rates of just four per 100,000 population below 50 years rising to 380 per 100,000 population over 80. Three-quarters of all cases occur in patients over 65 and the age distribution is the most important factor determining the prevalence—the incidence doubles every decade until reaching a peak between 75 and 80 years.<sup>15</sup> Overall, 60% of colorectal registrations are for colon cancer and the remainder due to rectal or multiple tumours. In older patients, colorectal cancer presentation is often atypical and symptoms less specific than in younger subjects. The presence of anaemia or change in bowel habit is a ‘textbook’ rather than ‘typical’ presentation—the familiar symptoms of lethargy and abdominal pain making diagnosis more challenging.

In order to understand management and outcome studies the Dukes’ classification must be understood:

- Stage A —Tumour has not penetrated the entire thickness of the bowel wall—no nodes involved
- Stage B1 —Lesions up to, but not through, serosa
- Stage B2 —Lesions through the serosa with involvement of adjacent organs
- Stage C1 —Lesions up to, but not through, serosa plus regional lymph node metastases
- Stage C2 —Lesion through serosa with involvement of adjacent organs plus regional lymph node metastases

Whilst Dukes did not describe Stage D, this has not prevented us adding this later and the modified Astler-Coller classification is commonly used. Patients with metastatic disease to the liver and other distant sites are thus labelled Dukes' D in some series. With more advanced disease, both treatment and outcome will be affected.

## Screening

If detected early, carcinoma of the large bowel is curable and screening is a way of detecting early tumours in the absence of any symptoms. There are three basic tools for screening: digital rectal examination, faecal occult blood testing and sigmoidoscopy.

As with prostatic cancer, digital rectal examination can detect low rectal lesions and should be mandatory in the annual screening of elderly patients. However, this is not usually done. Unfortunately, rectal examination will only detect a few tumours, since most colorectal tumours are in the proximal colon.

The use of faecal occult blood can lead to a reduction in colorectal cancer mortality and results in the detection of earlier stage tumours.<sup>16</sup> This screening tool is more beneficial with advancing age, i.e. the percentage of adenomas and carcinomas found in patients with positive faecal occult blood test increases with advancing age<sup>17</sup> and elderly people are no less likely to comply with this investigation than younger subjects. Why we are loath to perform this simple and often helpful test remains unexplained.<sup>18</sup>

Although sigmoidoscopy is recommended by several groups for people aged 50 or above, the effectiveness of this test is not fully evaluated and it should be reserved for the investigation of bowel-

**Table 1.** Perceived problems in the early diagnosis of colon cancer in older patients.

- 
- Presenting symptoms are often vague, especially weight loss, change in bowel habit or fatigue
  - Reluctance to screen asymptomatic patients
  - There is a reluctance to investigate older patients with symptoms
  - There are major complications in older patients undergoing investigations (not true)
- 

related symptoms rather than for screening the asymptomatic elderly subject. Thus we have documented difficulties in the early diagnosis of colorectal cancer (Table 1).

## Treatment

### *Surgery*

A recent meta-analysis using aggregate data broken down by age from 28 independent studies looking at 34,194 patients,<sup>19</sup> found that elderly subjects:

- Were more likely to have an increased frequency of comorbid conditions
- Were more likely to present with later stage disease
- Were more likely to undergo emergency surgery
- Were less likely to undergo curative surgery than younger patients
- Had increased postoperative morbidity and mortality
- Had reduced survival.

However, for cancer-specific survival, age-related differences were much less marked because the interrelationship between age and outcome from colorectal cancer surgery is complex. If older patients present with later stage disease and have pre-existing comorbidity, they will require different surgical intervention. However, definitive treatment should always be considered. Carefully selected patients may benefit from surgery—many survive for two or more years, irrespective of age.

### *Adjuvant therapy*

Elderly patients with Dukes' stage B2 or C disease can benefit from adjuvant therapy. The mainstay is

chemotherapy or radiotherapy. A trial including patients up to 84 years of age showed that using 5-FU and levamisole decreased recurrence and mortality rates in all patients with positive lymph nodes and there was no alteration in survival in those patients over 60.<sup>20,21</sup> Whilst there have been concerns that older patients receiving these two drugs may have increased toxicity, this has not been the finding of large studies.

### *Radiotherapy*

Radiotherapy is particularly used as adjuvant therapy following resection of a rectal cancer as local relapse often follows surgery. Although radiotherapy will reduce the risk of local recurrence, it does not improve overall survival and clinical trials including older patients are few.<sup>22</sup> However, if older patients have radiotherapy they may be at higher risk of radiation-induced side effects and this should be considered before its commencement.<sup>23</sup>

### **Metastatic Disease**

Unfortunately, many patients with colorectal cancer require palliative therapy during the course of their disease. This may be due to metastatic cancer at presentation, local relapse or late metastatic disease. A meta-analysis of 13 randomised controlled trials showed that in a subset of trials, palliative chemotherapy was associated with a 35% reduction in the risk of death.<sup>24</sup> For an elderly patient, this translated into an absolute improvement in survival of 16% at both six and 12 months, and an improvement in median survival of 3.7 months. There is, however, little information on treatment toxicity, symptom control and quality of life. Whilst prolongation of life is a fundamental issue, an extra 3.7 months median survival must be weighed against the side effects and inconvenience of palliative chemotherapy. This is another area that requires further investigation—especially as older patients have been excluded from clinical trials attempting to address such issues.

The UKCCCR has worked hard to ensure that older patients are included in clinical trials of both palliative and curative therapy. Whilst we remain a long way from full inclusion, their position statement has highlighted the problems and possible solutions.<sup>25</sup>

Most metastases from colorectal cancer are in the liver. Although hepatic resection is useful in younger patients, there is limited evidence on the tolerability of the procedure in older patients. The only evidence is retrospective and although it showed no significant differences in morbidity and mortality in patients over 70 years compared to a younger group, much of the data was collected in the late 1980s when there was a higher morbidity and mortality than is now acceptable.<sup>26</sup>

### **LUNG**

Bronchial carcinoma is a disease of older people in particular. The epidemiology of lung cancer is hampered by poor investigations and a high proportion of death certificate only cases reported to Cancer Registries. Whilst some series have shown only 50% of cases to occur in patients over 60, a Royal College of Physicians Lung Cancer Audit Report showed a median age of 69 years for those investigated for suspected lung cancer within 51 participating hospitals. Furthermore, 29% of the men (oldest 92 years) and 27% of women (oldest 94 years) investigated were aged 75 years or above.<sup>27</sup> Thus the disease is common in the elderly population but doctors are not good at reporting cases. This ageist attitude is prevalent both in primary and secondary care and may stem partly from the poor investigation of patients suspected of having lung cancer<sup>28</sup> and also because of a reluctance to report a disease which has been poorly managed (in some cases, the patient is unaware of the diagnosis).

### **Investigation**

Older patients are less likely to undergo bronchoscopy. This may be a falsely perceived belief by clinicians that elderly people do not want to be investigated for suspected cancer or they feel that such investigations are too invasive and risky to be undertaken. There is no evidence for either assumption.<sup>29,30</sup> The histopathology of tumours in older patients differs from younger subjects in that:

- They are less likely to have small cell carcinoma and more likely to have a non-small cell carcinoma

- Older men have a greater than expected proportion of squamous carcinoma
- Older women have a greater than expected proportion of adenocarcinoma.

Unfortunately, with increasing age there is less likely to be a histopathological diagnosis in patients suspected of having lung cancer.<sup>31</sup> Without a definitive diagnosis, it is unlikely that the patient will be referred for definitive therapy. This is not only ageist but also prevents patients from being referred for palliative as well as curative treatment.

### Treatment

Small cell carcinoma accounts for 10–14% of investigated bronchial tumours. Despite this, elderly patients account for very few of those having chemotherapy. The lack of representation is true for both formal chemotherapeutic trials and those patients treated outside clinical trials. The exclusion of patients 65 years of age or above from cancer trials has been addressed by a Working Party from the UKCCCR.<sup>25</sup> The pharmaceutical industry is still loath to include older patients in trials, arguing that few elderly patients are free from comorbidity and that older patients are less likely to be treated in the ‘real world’.

### Chemotherapy

“Having chemotherapy is awful but having cancer is worse!” Most chemotherapy for lung cancer is for small cell tumours and many of the regimens contain etoposide (either as a single agent or in combination). Unfortunately, most patients with small cell lung cancer (SCLC) have extensive disease and require palliation. Most of the regimens for SCLC include cyclophosphamide, adriamycin and vincristine (CAV), etoposide and prednisolone (EP) or a combination of these agents. Studies of elderly patients with SCLC receiving chemotherapy versus no therapy or radiation alone, have shown that:

- Three-quarters of patients receiving chemotherapy require dose reduction
- Less than half the patients completed all six cycles of chemotherapy

- Chemotherapy is strongly correlated with survival.<sup>32</sup>

Since all drugs used in the treatment of SCLC are very toxic, factors such as oral versus IV (etoposide)<sup>33</sup> and the ability to administer in outpatients rather than the need for inpatient treatment must be considered. Neutropenia is a common side effect of most agents and patients require careful follow-up. There is no evidence that GCSF, although allowing dose escalations, improves survival and it should therefore not be routinely prescribed both for economic reasons and because of the symptoms it causes.<sup>34</sup>

There are many new drugs for the treatment of non-small cell carcinoma of the bronchus. Much of the evidence of the efficacy of these agents in older people is provided by the pharmaceutical industry. Whilst any data is better than none, negative trials are seldom reported.<sup>35</sup>

### Surgery

The relative excess of non-small cell carcinoma in older patients should result in older patients being considered for surgical intervention. This may be the only chance of cure but older patients are still poorly represented in surgical series.

Cardiopulmonary complications account for most of the morbidity and mortality from lung resections.<sup>36</sup> When considering pulmonary reserve it must be remembered that there are age-related changes in FEV<sub>1</sub> and FVC. Many patients with a primary lung cancer have been or continue to be smokers and the coexistence of other cardiac and pulmonary diseases increases both morbidity and mortality in the older patient undergoing surgery. It is interesting, however, to consider “what surgical mortality is acceptable in a disease that has a nearly 100% mortality rate?”<sup>37</sup> Given the choice, older people may be willing to accept risks that younger groups decline.

### Radiotherapy

Surgery gives the best hope of cure, despite 50% of tumours being unresectable at initial assessment. In older patients the presence of coexisting disease has

not discouraged some groups from operating on octogenarians in whom the one-year survival was 86% and five-year survival 43%.<sup>38</sup> Morbidity and mortality have been addressed by groups who have looked particularly at the pre-operative preparation of older patients using aggressive peri-operative pulmonary toilet and video-directed limited resection. They have found post-operative mortality rates of 4.8% in contrast to 1.6% in the general population but with similar morbidity rates (17.9% vs. 15%).<sup>39</sup>

Most trials of palliative radiotherapy for non-small cell lung cancer (NSCLC) include few patients over 75. When elderly patients have been included in trials, the median ages of those studied are often under 70, suggesting that elderly patients may have been included as a 'token gesture'. In a study by Patterson *et al.* of 149 patients aged 75–93 years who had had radiotherapy for lung cancer, older people seemed to benefit from such therapy. Of this group, 81% could be treated as an outpatient and haemoptysis and chest pain were well palliated. Although 18% of patients reported side effects, these were usually mild and self-limiting.<sup>40</sup> A further area where elderly patients may potentially be given radiotherapy is after resection of a NSCLC. A meta-analysis, however, has shown that whatever age one is, there is no role here for post-operative radiotherapy. Of interest is that there were the same number of patients recruited over 65 years of age as those aged 55–59 years.<sup>41</sup> The only example I know of the inclusion of many elderly patients into a trial—a shame that it showed the intervention to be hazardous!

## Survival

The age of the patient influences survival, with the relative risk of death being greatest in the over-75s, but these differences disappear after adjusting for case-mix and treatment. This improved survival in older people after adjusting for treatment suggests that the lower treatment rates in the elderly group may be the cause of their poorer survival.

Three issues pertinent to lung cancer should also be considered in the management of all tumours in older patients. The first is collusion. The Royal College of Physicians' audit highlighted that 12% of patients were not told their diagnosis.<sup>27</sup> The reasons given were that the patient had dementia or that the family requested that the patient was not told. This is a trend that many geriatricians resist. It is important

that in our wish to tell patients what is wrong with them, we ensure that they are considered for palliative and curative therapy, should a diagnosis of lung cancer be made.

Secondly, should older patients be managed by geriatricians or by a specialist? Older patients with lung cancer are less likely to be managed by a lung cancer specialist.<sup>42</sup> In some cases this may be appropriate, i.e. poor functional performance, extent of disease and general condition of the patient. However, older patients with suspected lung cancer should not be excluded from high quality management protocols because of reluctance of the geriatrician to refer the patient on or the specialist to take on the care of older patients.

The third issue concerns patients in whom a diagnosis of cancer is first made at the time of death. These are patients in whom Cancer Registry data is only provided at the time of death certification and such patients have generally not been investigated nor received active management. Whilst in some cases it may be appropriate that frail or demented patients are managed in primary care, some "death certificate only" registrations will include patients for whom investigation and therapy would have been appropriate.

## BREAST CANCER

Over half of all cases of breast cancer are diagnosed in women aged 70 or above. Some women who are elderly and frail, who previously may have died due to unrelated causes before the recurrence of their tumour, are now surviving. Improving survival rates (which are least in women aged 85 or more compared to those who are aged 35 or less) mean that many older women live for years with breast cancer.

## Screening

Screening for breast cancer is important because of the positive relationship between stage of disease and age at diagnosis.<sup>3</sup> Although in the UK triennial screening is mainly for women aged 50–64,<sup>43</sup> older women may attend for routine mammography and should be encouraged to request screening. Unfortunately, only 16% of all mammograms are done on women aged 60 years or above.<sup>44</sup> This is

despite the fact that early detection reduces mortality<sup>45</sup> and mammography increases the proportion of early cancers detected.<sup>46</sup>

Unfortunately, older women believe that they are at less risk of developing breast cancer than younger women<sup>47</sup> and because of this consider self-examination to be adequate. Older women are less likely to have breast examinations performed by their doctors<sup>48</sup> and doctors are less likely to send older people for screening.<sup>49</sup> If screening results in the early detection of potentially treatable tumours, then only quality of life and patient anxiety can outweigh the need for routine screening procedures. If we could increase the percentage of older women who receive mammography to 80%, the mortality in this age group would fall by 30%.<sup>50</sup>

## Treatment

The primary treatment for all breast tumours is surgery. Unfortunately, much evidence-based practice concerning the decision to perform a mastectomy or breast conserving surgery rests entirely on evidence from younger women, since older women have been excluded from most clinical trials addressing the efficacy of various treatments.

*Is a total mastectomy required?* Several studies have demonstrated the equivalence of total mastectomy and partial mastectomy in combination with post-operative radiation in the management of primary breast tumours. Unfortunately, the tumour size varied within the reported trials from less than 2.5 cm to greater than 5 cm.<sup>51–54</sup> An important factor in the decision between two surgical procedures is patients' preference, which should be considered whenever possible. Whilst anecdotally a partial mastectomy may be associated with a better quality of life, this has not been the finding of a recent meta-analysis.<sup>55</sup>

*Do all patients require axillary dissection in the management of locally invasive breast cancer?* Axillary dissection is done both for staging and to eliminate any residual disease. If axillary dissection results in lymphoedema, this may be particularly troublesome for the older woman with already impaired upper limb function. Prolonged surgery will also lengthen the anaesthetic period. Advances such as sampling of a sentinel "lymph node" using radioactive tracer will ensure that if the sentinel lymph node is free from tumour (suggesting a

tumour negative axilla), the patient is spared axillary dissection.<sup>56</sup>

### *Adjuvant tamoxifen*

Older women with early stage breast cancer have decreased recurrence and mortality rates if treated with adjuvant tamoxifen.<sup>57</sup> A systematic review studied 133 randomised trials with a total population of 75,000 women. This review included over 2,500 women aged 70 years or above and found a decrease in recurrence of 28% and decreased mortality of 21% in patients with node-positive disease treated with tamoxifen.<sup>58</sup> The adjuvant tamoxifen therapy was also beneficial for women with hormone-receptor-poor tumours, albeit to a lesser extent than oestrogen-receptor-rich tumours. Tamoxifen is useful not only as adjuvant therapy for women with breast cancer,<sup>59,60</sup> it also helps prevent osteoporosis and lowers cholesterol levels.<sup>61,62</sup>

As with hormonal therapy for prostate cancer, an initial flare of the disease may occur on commencing therapy. Although the side effects of tamoxifen are generally mild, nausea and vomiting may result in poor compliance. Tamoxifen is highly protein bound and thus interacts with drugs such as warfarin.

Tamoxifen has been linked with an increased risk of deep vein thrombosis and endometrial cancer. However, as tamoxifen may cause postmenopausal bleeding, it may have been that this led to the diagnosis of an asymptomatic endometrial cancer.

### *Adjuvant chemotherapy*

In a meta-analysis of 75,000 women, only 274 were aged 70 or above and receiving adjuvant chemotherapy. There was no definite proven efficacy of adjuvant chemotherapy in this small and often unrepresentative group. This does not mean that adjuvant chemotherapy is of no benefit; but that the evidence does not exist!<sup>63</sup>

## Metastatic Disease

### *Tamoxifen*

Tamoxifen is often the first line of treatment, since it is easy to administer and well tolerated. About

30% of women with metastatic disease respond to tamoxifen, with the highest response rates in those who have hormone positive receptors. Additionally, women who have soft tissue or bony metastases or who have had a long disease-free interval are also more likely to respond to tamoxifen. If response to tamoxifen is not seen or if the patient relapses whilst on tamoxifen, megestrol acetate or aromatase inhibitors may be useful. Unfortunately, nausea, weight gain and fluid retention are common side effects of megestrol and are troublesome in older women with coexisting cardiac disease or orthopaedic problems.

Whilst megestrol may have the undesired effect of weight gain, in the presence of tumour cachexia (irrespective of whether due to breast cancer or an unrelated tumour), it may stimulate appetite and cause palliative weight gain. Thus it may be useful in the management of patients with extreme cachexia and is particularly useful since therapeutic levels are achieved within three days of commencing megestrol.

### *Chemotherapy*

Most women who have been treated with hormone therapy for metastatic disease will fail to respond or will relapse subsequently.<sup>64</sup> A decision must then be made about chemotherapy. Although, as with many younger women, a complete response is rare, partial responses lasting several months may be expected in up to half of the patients treated.<sup>65</sup> The elderly women must be actively involved in the decision-making on such treatment, as the potential benefits as well as the risks are considerable.

In patients with metastatic carcinoma, there is no advantage in giving combination chemotherapy with cyclophosphamide, methotrexate and 5-fluorouracil (CMF) over treating with tamoxifen alone. In a crossover study there was no difference in response or survival—although the group who received tamoxifen first appeared to have a more favourable prognosis.<sup>66</sup> This supports the practice of starting patients on tamoxifen and only swapping to chemotherapeutic agents if there is no response or when the patient relapses. Whilst drugs such as taxol (paclitaxel) is licensed for the treatment of metastatic breast carcinoma when standard anthracycline containing therapy has failed or is inappropriate, studies of elderly women have found an overall response rate of only 23% with a median

time to progression of four months. Patients in whom a consideration of taxol is being made are often heavily pre-treated and febrile neutropenia may occur in as many as 45%—far above that expected in a previously untreated group.<sup>67</sup>

## **OVARIAN CARCINOMA**

Although the aetiology of ovarian carcinoma is not known, both familial factors (which may be more important in younger patients) and uninterrupted ovulation (more evident in many older women) are associated factors. Ovarian cancer becomes increasingly common with advancing age. For women under 50, the incidence is 20 per 100,000 whereas over the age of 50 it is 40 per 10,000.<sup>68</sup>

At presentation, older patients are more likely to have more advanced disease. Additionally, older patients have poorer survival than younger patients, irrespective of stage of disease at presentation and comorbidity. Thus older women with ovarian cancer have more aggressive disease. Once again, as with other sites, it is difficult to determine whether older patients respond poorly to treatment or whether the tendency of physicians to reduce chemotherapy dose intensity or alter regimens to reduce toxicity simply results in less effective treatment.<sup>69,70</sup>

### **Screening**

As ovarian carcinoma has few specific symptoms, the role of screening to identify tumours must be considered. Two areas are currently under debate—serum CA125 estimations and transvaginal ultrasonography. CA125 is an epithelial marker, which is elevated in more than 80% of patients with ovarian carcinoma. Its use is limited, however, since although 90% of patients with stage III or IV disease have an elevated CA125, only 50% of those with stage I disease have raised levels. It is also raised in benign gynaecological conditions and may therefore be a cause of anxiety due to false positive results.

Whilst transvaginal ultrasonography may be useful in high-risk patients, two non-age-stratified trials of over 2,000 women detected five stage I ovarian cancers, with many normal laparotomies being performed during the course of the trial. There is no evidence for screening older women,



although this is in part because trials have tended to exclude older women in their recruitment, rather than negative findings from existing trials.

### Management of Limited Disease

Laparotomy determines the extent of disease (Table 2). Those tumours confined to the ovary (stage I) or pelvis (stage II) are then assessed for risk of recurrence (Table 3). Histopathological grading, the absence of extra ovarian disease, no ascites and negative peritoneal cytology are considered as ‘low risk’ for recurrence. Those patients who undergo total abdominal hysterectomy, bilateral salpingo-oophorectomy and omentectomy alone, and who are considered to have a low risk for recurrence, have a cure rate which exceeds 90% and require *no* additional therapy. Those women considered to be at “high risk” (extra ovarian disease, ascites or positive peritoneal cytology) have a recurrence rate which may be as high as 40%. These patients *require* additional therapy after surgical resection in the form of chemotherapy.<sup>71,72</sup>

**Table 2.** FIGO staging system for ovarian carcinoma.<sup>95</sup>

Stage	Description
I	Growth limited to the ovaries A – One ovary; no ascites; capsule intact; no tumour on external surface B – Two ovaries; no ascites; capsule intact; no tumour on external surface C – One or both ovaries with either: surface tumour; ruptured capsule; or ascites or peritoneal washings with malignant cells
II	Pelvic extension A – Involvement of uterus and/or tubes B – Involvement of other pelvic tissues C – IIA or IIB with factors as in IC
III	Peritoneal implants outside pelvis and/or positive retroperitoneal or inguinal nodes A – Grossly limited to true pelvis; negative nodes; microscopic seeding of abdominal peritoneum B – Implants of abdominal peritoneum 2 cm or less; nodes negative C – Abdominal implants greater than 2 cm and/or positive retroperitoneal or inguinal nodes
IV	Distant metastases

**Table 3.** Risk groups of patients with limited ovarian carcinoma.

Group	Characteristics
Low Risk	Grade 1 or 2 disease Intact capsule No tumour on external surface Negative peritoneal cytology No ascites Growth confined to ovaries
High Risk	Grade 3 disease Ruptured capsule Tumour on external surface Positive peritoneal cytology Ascites Growth outside ovaries

If any high-risk factors are present, the patient is considered high risk.

### Management of Advanced Disease

All patients with stage III or undiagnosed stage IV disease should have an exploratory laparotomy. This allows exploration of the entire peritoneal cavity with biopsies to exclude microscopic disease and, for those patients with stage III disease, surgical de-bulking (although controversial in its efficacy) may be done. The mainstay of treatment for advanced disease is systemic chemotherapy.<sup>73</sup>

### Systemic Therapy

Drugs active against ovarian carcinoma include platinum compounds, alkylating agents, taxol, doxorubicin, oral etoposide and tamoxifen. The response rate for most of these agents is about 30%.<sup>74,75</sup> In patients with advanced disease, combination chemotherapy should cause tumour regressions of at least 50% or more in three-quarters of all patients with large volume disease. Of those patients who respond, complete regression occurs in 40–50% with a pathological complete response (these patients being disease-free at second-look laparotomy following the successful completion of chemotherapy) in 20–25%. This latter group has a medium progression-free survival of 18 months and a mean overall survival of 37 months.<sup>76,77</sup>

Whilst nausea, vomiting and hair loss occur with most of the above agents, cisplatin is particularly troublesome because of its nephrotoxicity. Cisplatin also requires in-patient administration, usually every three weeks. Whilst carboplatin is given as a day case every four weeks, it lacks nephrotoxicity but bone marrow suppression remains a major problem, particularly in older women.

Unfortunately, many women relapse after initial therapy and further treatment is based on whether they are considered to be platinum sensitive or platinum resistant. To be considered to be in the platinum-sensitive group, patients would have had an initial response to a platinum-based therapy regimen and had a platinum-free interval of greater than six months before recurrence. These patients may respond to further treatment with a platinum-based therapy, whereas those who are platinum resistant, i.e. fail to respond to first-line platinum therapy or relapse in less than six months after cessation of therapy, should be considered for other agents, such as taxol.<sup>78</sup>

## PROSTATE CANCER

In the past 20 years the diagnosis of prostate cancer has risen four-fold whilst the mortality rate has only doubled. There are several reasons for the increased incidence and prevalence:

- Treatment is improving, thereby reducing the mortality
- Prostate specific antigen measurement is increasing the pick-up of cases
- There is a rapidly expanding elderly population
- There is an increased awareness of, and reduced reluctance to report, cancer of the prostate.

Prostate cancer is now the most common malignancy to affect older men<sup>79</sup> and it is the second most common cancer death in males.<sup>80</sup> In England and Wales in 1997 there were 8,519 deaths from prostate cancer.<sup>81</sup> However, it is a slowly progressive disease<sup>82</sup> and consequently more men will die with the disease rather than from it.<sup>83</sup>

### Screening

There is controversy as to whether screening for prostate cancer is worthwhile. This is not because

of problems with screening for early disease but rather whether active intervention alters patient outcome. Without evidence that radical prostatectomy versus watchful waiting reduces morbidity and mortality, screening may be a waste of valuable resources. However, there is more to consider than absolute mortality figures: the management of an elderly man with prostate cancer is expensive and quality of life issues must be considered.

Since 1992 the American Cancer Society and the American Urologic Association have suggested that every man aged 50 years and older should undergo an annual prostate specific antigen (PSA) measurement and digital rectal examination. They did, however, add a rather ageist proviso that life expectancy should be at least 10 years in those men screened—another example of how elderly men in whom most prostate cancer exists may be excluded from yet another screening programme (Table 4).

There are only two proven interventions in prostate cancer screening. These are digital rectal examination<sup>84,85</sup> and PSA measurements.<sup>86</sup> Although anecdotally digital rectal examination in older patients has been considered to be poorly received, a recent study shows otherwise.<sup>87</sup> A review of several studies evaluating rectal examination as a diagnostic tool has shown that the detection rates of prostate cancer vary between 0.1% and 2.5%.<sup>86</sup>

**Table 4.** Controversy over prostate cancer screening.

#### For screening

- Prostate cancer very common in elderly men
- Allows early detection of cancer
- If tumour is localised curative treatment may be possible

#### Against screening

- Many men die with rather than from prostate cancer
- Some tumours may have similar results with watchful waiting rather than active therapy
- Other less differentiated tumours do badly irrespective of therapy
- Prostate cancer tends to be a disease of older men, thus other causes of death often supervene
- Most cost-effective age group may be elderly men in whom co-existing morbidity prevents aggressive therapy

Prostate specific antigen is found in both semen and serum. The levels in the former are much greater than in the latter and thus any process that allows PSA to leak into the blood will cause increased serum levels. Therefore, rectal examination, prostatic biopsy and malignancy will all result in elevated levels.

There is also controversy about the normal range of PSA with increasing age. Some laboratories who consider a higher level to be normal in older men may lead to an underestimation of the number of men with prostate cancer or may provide false reassurance.<sup>88</sup>

Prostate specific antigen estimation will identify more cancers than rectal examination. However, up to one in five patients with prostate cancer will have a normal PSA at presentation and therefore no single method should be used exclusively to exclude cancer of the prostate and high index of suspicion must be present in all elderly men with symptoms of prostatic enlargement.

## Treatment

The key to treatment is determining which tumours are safe to be treated by watchful waiting and which tumours require radical therapy. This appears to depend primarily on the differentiation of the tumour, with very aggressive tumours requiring radical therapy and well-differentiated tumours that are slow growing benefiting from a watchful waiting philosophy.

The most common grading system used in histopathology laboratories when assessing prostate cancers is the Gleason system.<sup>89</sup> Although this was first published in 1966, few systems have superseded that show superior predictive characteristics. In the Gleason system, there are two numbers: the first represents the primary tumour grade and the second the grading of the glands. Thus a combined score is obtained, with a low figure being found in well-differentiated tumours and a score of between seven and 10 indicating a poorly differentiated tumour. Unfortunately, only 10–20% of prostatic tumours are well differentiated, with most being moderately differentiated. A further 10% of patients have poorly differentiated tumours.

There are four main treatment options:

- watchful waiting;
- radical prostatectomy;

- radiation therapy;
- hormonal therapy.

### *Watchful waiting*

This is generally applied to well-differentiated tumours and whilst the patient is free from any side effects of treatment, they are aware that they have a tumour that is being untreated and this may cause psychological morbidity. Additionally, over the years the disease is likely to spread. Whilst within the first 10 years after diagnosis the treatment is unlikely to affect survival, if watchful waiting is applied, 10 years later they are considerably older and may have coexisting comorbidity that prevents definitive therapy.

### *Radical prostatectomy*

This may affect continence and result in a high incidence of impotence. As operative procedures improve and radical retropubic prostatectomy is replaced by radical peroneal prostatectomy, a shorter hospital stay is necessary. Full recovery is quicker without an abdominal wound and any mobilisation due to diminished post-operative pain is important in the very elderly man. Thus when referring a patient for surgery, the likely procedure to be undertaken must be considered.

### *Radiation therapy*

This is the most commonly used therapy for prostate cancer, and usually uses conventional external beam. Radiation proctitis and cystitis may occur as either acute or chronic side effects. As with radical surgery, incontinence and impotence may follow radiotherapy.<sup>90</sup> There are no good studies comparing the efficacy of radical prostatectomy versus radiation therapy. Despite there being no clear evidence of any superior efficacy radiotherapy, brachytherapy and cryotherapy continue to be used outside clinical trials for primary treatment rather than for metastatic disease.

### *Hormonal therapy*

Spread of the cancer beyond the prostate indicates that curative therapy is futile. Palliative therapy by hormone manipulation is used not only for such patients but also for older patients with localised

disease. There is no evidence for this. Hormone therapy for prostatic cancer works in one of three ways, i.e. blocking the various steps of androgen production, secretion or its action. Hormone therapy may be administered as the results of an orchidectomy or the administration of various chemical agents.

### *Orchidectomy*

The testes produce almost all the serum testosterone. Thus a bilateral orchidectomy results in a rapid decrease of serum androgen levels. In some patients, this has been used as an urgent treatment for painful metastases since no drugs will give such an immediate decrease.

### *Oestrogens*

Diethylstilboestrol is very seldom used because of an increase in cardiovascular deaths in treated patients.<sup>91</sup> Higher doses of diethylstilboestrol reduce antithrombin III by as much as 25% and this is considered to be a major factor in the increased morbidity and mortality.

### *Other agents*

GnRH analogues reduce levels of testosterone through their action on the pituitary gland. They cause down-regulation of GnRH receptors, resulting in the pituitary being refractory to further stimulation, as well as depleting pituitary LH. Current formulations of available GnRH agonists such as goserelin acetate and zoladex require monthly injections and a further problem may be an initial increase in pain from metastases as just before blocking testosterone production, they stimulate the testes to increase the output of testosterone. Particular care must be taken in patients with metastatic disease, as this flare phenomenon may result in pressure effects, particularly in sites where metastases may cause obstruction (such as the spinal cord). They do, however, avoid the potential increase in cardiovascular deaths, since no antithrombin III increase is seen with goserelin.<sup>92,93</sup>

Flutamide is a non-steroidal anti-androgen which blocks the effect of dihydrotestosterone on the cell nucleus. This therefore protects from the initial rise in testosterone levels as well as permanently blocking the effects of adrenal steroids. Flutamide is given in

combination with GnRH agonists; this therapy is termed complete androgen blockade. As with most good drugs, flutamide is not free from side effects and diarrhoea may complicate its administration, a particular problem if proctitis is already present. A careful watch must also be made for hepatic dysfunction and a further problem for older patients is the t.d.s. dosage of flutamide. The introduction of casodex (which has a once-daily dosing) may further improve compliance in very elderly men and supervene the prescribing of flutamide.

Hormone manipulation results in hot flushes. Whilst this diminishes with time, there are reports of megestrol acetate being used successfully in their obliteration.<sup>94</sup>

## CONCLUSION

Older people account for many cancer cases but few of the treated ones. Ageism stems from many quarters and may even include geriatricians. Evidence is sometimes contradictory. There is a lack of guidelines for the management of older cancer patients.

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## 32. Ophthalmology

Paul Diggory and Wendy Franks

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*'The laughing leaves of the tree divide  
and screen from seeing and leave in sight  
the god pursuing, the maiden hid.'*  
Swinburne

### SORE AND RED EYES

In elderly people, eyelid problems are the main cause of sore eyes.

#### Blepharitis

- Due to blockage and scarring of the Meibomian glands behind the lash margin. These glands secrete an oily layer over the tear film preventing evaporation. The tear film dries out and exposes the corneal nerve endings, leading to pain.
- Often confused with conjunctivitis, as there may be conjunctival injection.
- The commonest cause of a chronically irritable eye at all ages, but is more common in elderly people as tear production declines with age.
- Reflex increased tear production, so paradoxically the complaint may be of a watery eye.

#### *Features:*

Itchy red eye, often watery.

#### *Treatment:*

- Twice daily cleansing of the lashes with cotton wool soaked in saline or dilute bicarbonate of soda. (Dilute baby shampoo is also effective and does not sting the eyes.)
- One month course of broad spectrum antibiotic cream applied twice daily by rubbing into the lashes occasionally needed.
- Tear film supplements.

- In severe cases oral tetracycline 250 mg bd. for 3 months.
- Ophthalmological referral if no response to treatment.

#### Conjunctivitis

Usually bilateral and due to infection.

#### *Features:*

Very red eye(s), often discharge. Generally minor irritation.

#### *Treatment:*

- Simple eye care hygiene as for blepharitis.
- Topical antibiotics — broad spectrum, e.g. chloramphenicol.
- Refer if no improvement in a week to confirm or refute diagnosis.

#### Corneal Ulcers

#### *Causes include:*

- Eyelid abnormalities
- Trauma (demented patients may give no history)
- Dry eye
- Herpes Zoster

#### *Features:*

- Painful eye with photosensitivity
- Perilimbal (round edge of iris) hyperaemia
- Cloudy cornea
- Hypopyon (pus in the anterior chamber forming a fluid level)

#### *Treatment:*

- Urgent ophthalmological referral for intensive antibiotics or antivirals to prevent scarring or perforation.



## Entropion

Rolling in of the lower lid. (Upper lid entropion is rare, but may occur in people who have lived in hot dry countries and have had trachoma.)

- Eye lashes rub against the cornea
- Watery eye
- Redness inferiorly
- Pain
- Corneal ulceration

### Features:

Mild conjunctival hyperaemia, gritty eye.

### Treatment:

Micropore/sellotape eyelid to cheek while awaiting surgery.

## Ectropion

- Rolling outwards of the lower eyelid, particularly medially
- Tears pool in the lower lid
- Exposed conjunctiva on the outturned lid becomes red

### Features:

Mild conjunctival hyperaemia. Irritable eye with discharge.

### Treatment:

Surgery under local anaesthetic.

## Tear Problems

Tear production is reduced in old age and in association with systemic disease. Eye closure may be abnormal because of nerve damage, e.g. Bell's palsy or stroke.

### Features:

Gritty eyes. May become inflamed.

### Treatment:

Artificial tears such as hypromellose drops four to six times daily. Surgery if eye closure impossible.

## Uncommon Causes of Red Eye in Elderly People

### Iritis

If presents for the first time in old age and is bilateral, it is likely to be associated with systemic disease.

### Features:

- Painful eye with photophobia
- Perilimbal hyperaemia
- Small non-reactive pupil

### Treatment:

- Ophthalmological referral
- Treatment includes mydriatics, topical/systemic steroids and non-steroidal anti-inflammatory drugs.

### Acute glaucoma

- Rare condition which can be precipitated by taking anticholinergic drugs systemically or by having the pupil dilated with eye drops.
- Pain may be very severe often with vomiting, and patients, especially those with cognitive impairment, may be admitted with a diagnosis of gastrointestinal disease.

### Features:

A fixed mid-dilated pupil differentiates acute glaucoma from other causes of red eye. The cornea is cloudy so that the red reflex and the fundus cannot be seen.

### Treatment:

- Immediate ophthalmological referral whatever time of night, to prevent blindness.
- Therapy is to reduce aqueous formation with intravenous acetazolamide (which may cause or exacerbate hypokalaemia due to vomiting) and topical pilocarpine to open the angle and increase drainage.
- Once the intraocular pressure has fallen, laser iridotomy, including the other eye, prevents further attacks.
- After iridotomy anticholinergic drugs and pupil dilation can be prescribed without risk of precipitating further attacks.

### Precipitation of Glaucoma by Drugs

- Only acute (narrow angle) glaucoma can be precipitated by anticholinergic drugs
- Anticholinergic drugs are not contraindicated in chronic simple (open angle) glaucoma

## BLINDNESS AND VISUAL DISABILITY IN OLD AGE

The four most important causes of blindness and visual disability are:

1. Cataract
2. Macular degeneration
3. Chronic Simple (Open angle) Glaucoma
4. Diabetic eye disease

### Cataract

Is a reversible cause of visual loss but is still the commonest cause of blindness both worldwide and in the United Kingdom.

- Ophthalmological referral if patient symptomatic. (Acuity usually 6/12 or less.)
- The results of surgery are so good and the procedure so safe that most ophthalmologists will consider surgery for anyone with symptomatic cataract—regardless of age or general health.
- Surgery is performed under topical anaesthetic drops in stoical patients or local anaesthetic injection in more difficult cases.
- If the patient cannot, or will not, lie still then surgery must be under general anaesthetic.
- If patient is too confused to lie still for surgery, they are unlikely to be able to give informed consent and blind registration is appropriate.

#### Features:

Slowly progressive opacification of the lens with loss of visual acuity. The lens looks cloudy; dial the ophthalmoscope to +9, you may see spoke-like opacity or central haze. Fundal detail may be obscured and in severe cases the red reflex is lost.

#### Treatment:

- Surgical removal of the anterior capsule and cavity of the lens followed by implantation of a synthetic lens resting on the front of the remaining posterior lens capsule.

- Cataract does not recur but the posterior capsule may opacify, reducing visual acuity. Treatment is outpatient laser capsulotomy. Laser is applied to make a gap, along the visual axis, in the posterior capsule to restore vision.

### Macular Degeneration

Is a disease affecting the central retina. There are two forms: 'Dry' and 'Wet'. Both are increasingly common with age.

#### 'Dry' macular degeneration

- Due to atrophy of the pigment epithelium and the overlying retina.
- Visual loss is gradual and predominantly a central scotoma.
- Preservation of peripheral vision leaves navigational vision, allowing mobility.
- Distance vision is often quite good.
- Reduced acuity causes difficulty reading and recognising faces.
- Visual prognosis is relatively good and patients should be reassured that they will not go "completely blind".

#### Features:

Reduced vision, especially difficulty in reading. Visual distortion may herald wet macular degeneration. Large pale accumulations of debris, called 'drusen', are typically seen at the macula. They resemble hard exudates in appearance. In more severe cases, atrophy of the choroid gives the appearance of a large pale round lesion across the macula.

#### Treatment:

There is no medical treatment. Low visual aids are of benefit. Referral should be made to an ophthalmologist for diagnosis and partial sight registration.

#### 'Wet' macular degeneration

- More severe form accounting for about 15% of cases.
- Due to formation of a neovascular membrane underneath the retina, which may invade through the pigment epithelium (the light absorbent layer

underneath the photoreceptors) and into the retina itself.

- The membrane is prone to bleed, usually causing a blood clot within the retina but occasionally bursting into the vitreous.
- When haemorrhage occurs, visual loss may be sudden and severe.

*Features:*

Visual loss may be rapid with visual distortion. Fundoscopy as for 'dry' but there may be haemorrhage.

*Treatment:*

- If vitreous haemorrhage has occurred then vitrectomy (removal of the vitreous) may be required.
- Photodynamic therapy can reduce visual loss in a minority of cases.
- Other treatments include surgical removal of the membrane and ablation by laser or radiotherapy.

Many other therapies have been advocated for 'wet' macular degeneration. They have not been justified by randomised trials. Although the occasional individual responds well, treatment may worsen vision. Patients should be referred to an ophthalmologist for diagnosis, possible treatment and blind/partial sight registration. Low visual aids may be of benefit in less severe cases.

## **Glaucoma**

Chronic simple (open angle) glaucoma affects up to 5% of people over the age of 65, becoming commoner with increasing age. There is an increased incidence among family members. First degree relatives should be screened. Glaucoma patients must inform the DVLA, who will request binocular visual field to assess fitness to drive.

Most cases are detected by optometrists at routine sight tests by finding:

- Raised intraocular pressure (IOP)
- Visual field defects
- Optic disc cupping (enlargement of the depression in the centre of the optic disc)

'Low tension glaucoma' with pressures within the normal range of 10 to 21 mmHg is found in 15% of patients. The community incidence is probably higher.

*Features:*

Painless visual loss. Asymptomatic in the early stages. In later stages, poor navigational vision, bumping into things despite good central acuity.

*Treatment:*

- Eye drops lower IOP by reducing aqueous formation and/or drainage.
- Laser treatment or surgery can be used to increase drainage.
- The lower the pressure the slower the rate of progression of visual loss.

Treatment of low tension glaucoma is difficult, but if the pressure can be lowered to less than 14 mmHg then progression appears to be halted. Lowering IOP may be difficult to achieve even with surgery and/or multiple eye drops. A compromise may have to be made between side effects of treatment and ideal IOP.

The choice of drug depends on the type of glaucoma, response to treatment and systemic and local side effects. Polypharmacy is common.

## **Classes of topical therapy**

- Anticholinergics, e.g. pilocarpine
- Beta antagonists, e.g. timolol
- Alpha adrenergic agonists, e.g. brimonidine
- Adrenaline and dipivefrine (which is metabolised to adrenaline)
- Carbonic anhydrase inhibitors, e.g. dorzolamide
- Prostaglandin receptor agonist, e.g. latanoprost

### **Side effects of eye drops**

- Eye drops may produce local allergy even after months of use. If a red eye develops, the drops should be stopped or substituted.
- Absorption from the nasal mucosa, reached via the nasolacrimal duct, avoids first pass metabolism. Systemic side effects of any eye drop should be considered.
- Topical beta antagonists are absorbed systemically. Many elderly people prescribed topical beta antagonists can develop respiratory impairment, heart failure or bradycardia.
- Systemic absorption of pilocarpine may cause confusion.

## Diabetic Eye Disease

The risk of developing diabetic eye disease increases with duration of diabetes. Retinal changes are rare before ten years of disease. Diabetic patients should receive screening for retinopathy. Sight loss occurs in three ways:

### *Macular oedema*

Capillaries in the central retina leak fluid into the extravascular space due to endothelial dysfunction. This causes the appearance of hard exudates and swelling of the retinal layers. Treatment with laser is successful in reversing and preventing visual loss in many cases.

### *Macular ischaemia*

If the macula is ischaemic with loss of the capillaries, laser treatment is ineffective in preserving sight.

### *Neovascularisation*

The formation of new blood vessels on the retina and iris can lead to haemorrhage, retinal detachment and secondary glaucoma. Visual loss may be complete. If neovascularisation is detected before complications develop, laser treatment is effective in producing regression and preventing sight loss.

Fluorescein angiography is used to visualise the state of the capillaries in diabetic eye disease and to reveal the extent of neovascularisation.

#### **Diabetic eye disease and myocardial infarction**

- Diabetic retinopathy, with or without neovascularisation, is not a contraindication to thrombolytic therapy.

## SUDDEN SEVERE LOSS OF VISION

- Temporal arteritis
- Acute anterior ischaemic optic neuropathy
- Central retinal artery occlusion
- Central retinal vein occlusion

Other causes include:

- Retinal detachment
- Vitreous haemorrhage

## Temporal Arteritis

Also known as giant cell or cranial arteritis, this is an inflammatory process that occludes small and medium-sized arteries, classically the ophthalmic artery.

### *Features:*

Headache, raised ESR, tenderness of affected arteries, sudden visual loss. Diagnosis may be confirmed by temporal artery biopsy but because only sections of arteries are affected, diagnosis is generally made without histology.

### *Treatment:*

- High dose steroids (1 mg/kg). Gradual reduction over 1–2 years according to symptoms and ESR
- Therapy with anti-osteoporotic drugs should be considered together with steroids.

## Acute Anterior Ischaemic Optic Neuropathy

A rare, non-inflammatory occlusion of the ophthalmic artery. More common in elderly people.

### *Features:*

Sudden loss of vision, sometimes to no perception of light (NPL). No rise in inflammatory markers.

### *Treatment:*

There is no treatment for the condition, which is not usually bilateral. Refer to ophthalmologist for diagnosis, blind registration and low visual aids.

## Central Retinal Artery Occlusion

### *Features:*

Sudden total loss of light perception. The fundus is pale with a cherry red spot at the macula. The cause is either embolic or associated with temporal arteritis.

### *Treatment:*

If embolic, immediate lowering of IOP and ocular massage may dislodge the embolus but most attempts are unsuccessful.

## Central Retinal Vein Occlusion

### Features:

Sudden loss of vision but perception of light retained. Massive haemorrhages can be seen within the retina. May only affect one branch of the central retinal vein. Associated with atherosclerosis, hypercoagulability states and raised intraocular pressure.

### Treatment:

- Laser photocoagulation of the retina may prevent further complications, such as vitreous haemorrhage or secondary glaucoma.
- Antiplatelet/anticoagulant therapy to reduce risk to opposite eye.

## REFERRAL TO AN OPHTHALMOLOGIST

When making a referral to an ophthalmologist include:

### History:

Time course

Effect of visual loss on function and well-being

Rate of visual loss

Other medical problems

All medication—not just eye drops

### Findings:

Check visual acuity.

Describe conjunctiva/cornea/iris/pupil & reactions as appropriate.

Funduscopy.

Who not to refer to eye clinics:

### Neurological defects:

Strokes, homonymous field defects (unless for blind registration or visual aids), headaches, migraine and other neurological conditions, which are best assessed by neurologists.

### Spectacle prescription:

Optometry services in the community provide free eye tests for people over 65. The health authority lists optometrists who will do domiciliary visits.

## Visual Acuity (measure in both eyes)

- Snellen chart line at 6 metres. Use distance glasses if appropriate.

- Alternatively ‘large newsprint’, ‘small newsprint’, ‘count fingers’ (CF), ‘hand movements’ (HM), ‘perception of light’ (PL), ‘no perception of light’ (NPL). Use reading glasses for near vision.
- A pinhole corrects for refractive error.

## LOW VISUAL AIDS

Dispensed by optometrists both in hospital ophthalmology departments, optician’s shops, Partial Sight Society and Royal National Institute for the Blind (RNIB).

Local authorities have a visual impairment team and may assess needs at home.

### Aids include:

- Hand magnifiers
- Stand magnifiers
- Scanners linked to computer screens with large fonts
- Large digit telephone number labels
- Large digit watches and clocks
- ‘Talking’ clocks
- Templates for cheque or pension book signature placement

## FITNESS TO DRIVE

The Driving and Vehicle Licensing Authority visual acuity standard for driving is to be able to read a number plate at 25 yards with or without spectacles and in good light. This equates to a vision of about 6/12 or better on a standard Snellen acuity chart.

If there are visual field defects within 120 degrees horizontally and 40 degrees vertically, the Driving and Vehicle Licensing authority will withdraw the licence to drive regardless of the visual acuity. This typically occurs with glaucoma but may also apply after extensive laser treatment for diabetic retinopathy and in cases of quadrantanopia or hemianopia.

## BLIND AND PARTIAL SIGHT REGISTRATION

To qualify for blind or partial sight registration both eyes must have poor sight.

*Partial sight registration*

Visual acuity in the better eye should be 6/24 or worse. A better visual acuity may be considered if there is a visual field defect.

*Full blind registration*

Visual acuity should be 6/60 or less in the better eye or the visual field should be restricted to 10 degrees or less.

**Benefits and help available after blind/partial sight registration**

- *Central government.* Blind registration will be taken into account in application for disability living and attendance allowance. Equipment leads to increased tax threshold. There is £1.25 off TV licence fee for blind registration.
- *Local government.* Visual impairment team assess need automatically once registered. Benefits available vary between councils, as may time between registration and assessment.
- *Royal National Institute for the Blind (RNIB).* Will supply aids. Has an excellent catalogue.
- *Guide dogs.* Both the cost of providing and the keep of the dog are free.

**RECOMMENDED READING AND ADDRESSES**

'At a glance guide to the current medical standards of fitness to drive.' Driver and Vehicle Licensing Agency. (DVLA), Swansea, SA99 1TU. Tel. 01792 783686.  
Internet. [dmu.dvla@gt.net](mailto:dmu.dvla@gt.net).gov.uk.

'ABC of Eyes.' AR Elkington & PT Khaw. British Medical Association Publications, Tavistock Square, London WC1H 9JR, ISBN 0-7279-0240-7.

**SELF-ASSESSMENT QUESTIONS**

Answer true or false for each question.

1. a) Conjunctivitis is a common cause of a painful red eye in elderly people.
- b) Patients should be referred for partial sight registration if one eye has a visual acuity of less than 6/60.
- c) Deterioration in visual acuity following cataract extraction may be due to opacification of the posterior lens capsule.
- d) Entropion requires complicated plastic surgery.
- e) In suspected acute glaucoma a clear view of the fundus excludes the diagnosis.
2. a) In patients with glaucoma nebulised Ipratropium bromide should be avoided unless there is life-threatening bronchospasm.
- b) Topical beta-antagonists for glaucoma should be stopped immediately, without waiting for ophthalmic advice, if a patient has bronchospasm.
- c) Patients with severe cardio-respiratory disease should not be referred for cataract surgery.
- d) Soft exudates are typical feature of macular degeneration.
- e) Patients with macular degeneration should still be considered for cataract extraction to improve peripheral vision.



# 33. Hearing disorders

**T.A. Roper**

*Foreclosing a conversation which cannot be heard is like foreclosing a mortgage which cannot be paid. The deaf are evicted from the social world as the debtor is evicted from his home.*

Bernard Isaacs

Famous people with hearing impairment:

- |                      |                                     |
|----------------------|-------------------------------------|
| Bill Clinton         | President of the USA<br>(1993–2001) |
| Ludvig van Beethoven | Composer                            |
| Lou Ferrigno         | The Incredible Hulk (TV series)     |
| Thomas Edison        | Inventor                            |

Thomas Edison claimed, with regard to his inventing prowess, that his hearing difficulties helped him concentrate on the task in hand without fear of distraction. Sadly, not everybody's experience of hearing impairment is as positive as his. Most people experience:

- Difficulty following conversation, particularly in noisy environments
- Poor relationships with family and friends
- Problems hearing TV and radio
- Problems enjoying concerts/cinema/theatre
- Anxiety and depression
- Social isolation.

## PREVALENCE OF HEARING LOSS

The prevalence of hearing loss varies according to the method of survey used. Survey methods have included self-reporting, interview, audiometry or a combination of these. The national study of hearing demonstrated that about 16% of the adult population of the UK have hearing loss.<sup>1</sup> They used



**Figure 1.** ‘Stone deaf?’

audiometry and chose a level of hearing loss of 25 decibels (dB) or greater in the better ear as their cut-off. The prevalence rises with age so that 80% of people aged 75–79 years have hearing impairment with the above criteria.

## CAUSES OF HEARING LOSS

<i>Sensorineural</i>	<i>Conductive</i>
presbycusis	wax
noise	otitis externa
drugs	otitis media
Ménière's syndrome	perforated ear drum
acoustic neuroma	

Presbycusis and wax are common problems in old age and so only these will be discussed.

### Presbycusis

(Presbus=old akoustikos=hearing)

Presbycusis describes the decrease in hearing that occurs with ageing. It is the commonest cause of a bilateral sensorineural loss in old age. The exact



cause is unknown but a number of mechanisms have been put forward.<sup>2</sup>

- *Neural*: there is a degeneration of cochlear neurones, particularly in the basal section of the cochlea (the area responsible for high frequency).
- *Sensory*: there is degeneration of the sensory cells (the Organ of Corti) of the cochlea.
- *Vascular*: there is atrophy of the blood supply to the inner ear (striae vascularis).
- *Mechanical*: there is a loss of elasticity of the basilar membrane (the part of the cochlea that vibrates when sound reaches the inner ear).

All the above changes have been demonstrated pathologically but which ones are primary changes of ‘ageing’ and which are secondary consequences of these changes are unknown. Further problems exist in studying the aetiology of hearing loss due to ageing. It is difficult to separate environmental influences such as noise, illness or toxins from changes due to ‘ageing’ over a lifetime. Perhaps a cohort of babies should be placed in a vacuum at birth (given scuba gear to breathe for the rest of their lives) and their hearing tested every decade.

## Wax

The role that wax plays in hearing impairment has been controversial. Some authorities suggest that wax causes little hearing loss,<sup>3,4</sup> while others claim that wax can cause significant impairment.<sup>5,6</sup> The studies that show little impact on hearing used audiometry and demonstrated hearing loss of only 5–10 dB. However, with most elderly people having some form of hearing loss, it is reasonable to postulate that the additional burden of impairment caused by impacted wax can be sufficient to dramatically increase the social handicap to the patient.<sup>7</sup>

## HOW TO SYRINGE AN EAR

Most trainees may go through their training programme not knowing how to syringe an ear to remove wax, despite this being a common problem.

### *Preliminary Check*

1. You need to ask the patient if they have ever had perforated ear drums. If they do, there is a

risk of causing otitis media with the procedure. In this situation wax should be removed under direct vision by an ENT specialist.

2. Ask if there has been any recent discharge from the ear (the above risks apply).

### *Prepare the Patient*

1. If the wax is hard and impacted, it will need softening. A range of ear drops is available but olive oil is cheap and effective. This should be applied regularly for one week.

### *The Procedure*

1. Cover the neck and shoulders with a gown or towel.
2. You will need good lighting directed at the ear.
3. Get a syringe designed for the purpose.
4. Fill it with water. This can be normal saline, or simple tap water. It is crucial that the temperature of the water should be 37–38°C. If it is too low or too high, it will induce vertigo and sickness (the caloric effect).
5. Have a receiver beside the ear to collect water and waxy debris.
6. Aim the nozzle of the syringe up along the roof of the ear canal and inject the water.
7. After you have completed the procedure, dab the excess water from the ear.
8. Finally, examine the ear with an auriscope to make sure all the wax has been removed and note the appearance of the ear drum.

## TINNITUS

Tinnitus is the perception of a sound (or sounds), e.g. whistles, ringing, buzzing, hums etc. in the ears or head, which are not caused by an external, environmental source.

It should be distinguished from auditory hallucinations, where there is the synthesis by the brain, of sound into recognisable words or music, in the absence of an external source. Sometimes, the patient is aware of their own physiological processes such as vascular hums or bruits (called autophony). These sounds should still be called tinnitus until the sound is identified as part of the bodily process.

## Prevalence of Tinnitus

Tinnitus is common despite being relegated to a footnote in many textbooks of geriatric medicine. In the UK national survey, 1 in 3 adults had experienced tinnitus and 1 in 10 of the population had suffered tinnitus which lasted for 5 minutes or more.<sup>1</sup> Its prevalence increases with age and is present in 21% of people in the 60–79 age group. It is associated with (but not the cause of) hearing loss and the degree of upset it causes is correlated to the amount of hearing loss.

## Effects of Tinnitus

People with tinnitus complain about:

- Lack of sleep
- Inability to concentrate on their work
- The effect on their mood, ranging from anxiety to depression
- Worry that the tinnitus will damage their hearing (which is untrue). Tinnitus may be a marker of hearing loss and people may present with this symptom unaware that they have some hearing deficit.

## Causes

<i>PHYSIOLOGICAL</i>	<i>PATHOLOGICAL</i>	
<i>(Autophony)</i>	<i>Temporary</i>	<i>Permanent</i>
vascular hums	spontaneous	chronic noise exposure
exercise	noise induced	ototoxic drugs
occlusion of ear	e.g. disco	Ménière's syndrome
e.g. by pillow	drugs	acoustic neuroma
	e.g. alcohol	
	caffeine	
	aspirin	
	hypertension	

Physiological causes (autophony) are usually heard by normal people when there is silence, especially around bedtime. Temporary causes are those which have been experienced by most people at some time in their lives, e.g. after a loud concert. Alcohol in small doses can relieve tinnitus because of its sedative effects but large binges can cause reversible tinnitus. Aspirin can cause tinnitus but only in high doses. (This was seen commonly in the past when aspirin was used to treat rheumatic

fever.) There are many pathological causes of deafness which are irreversible. Many causes of sensorineural deafness can cause tinnitus.

### **Any cause of deafness can cause tinnitus.**

Occasionally tinnitus may have a true environmental cause (pseudotinnitus). Suspect this if the noise is only heard in a particular location and especially if someone else can hear the noise as well. You may need to enlist the help of your local environmental officer to confirm that a sound is coming from the environment, e.g. overhead cables, transformers, rumbles from underground pipes etc.

## AURAL REHABILITATION

Most elderly people have sensorineural hearing loss and/or tinnitus which is irreversible. Therefore, as with any rehabilitative process, the aim of aural rehabilitation (in the absence of cure) is to minimise disability and reduce handicap resulting from hearing loss and/or tinnitus. This process has many elements and I will discuss those of tinnitus in more detail than hearing loss (because hearing loss is well covered elsewhere).

## Hearing Loss

1. *Treat a specific disease* if possible, e.g. otitis media, otitis externa with antibiotics, remove obstructive wax.
2. *Amplification*

*A cheap hearing aid is like a cheap newspaper. It magnifies and distorts but does not discriminate.*

Bernard Isaacs

Many models of hearing aid exist, including:

- body-worn aids;
- behind-the-ear aids;
- in-the-ear aids;
- spectacle aids;
- programmable aids.

They all have their advantages and disadvantages (see<sup>8,9</sup> for a description of aids).

Despite the choice of aids available (they are more limited in the NHS), there are still people who do not use their aid. Many people try to use miniature aids (compare with the visually impaired who choose to use

contact lens rather than spectacles). For many people a hearing aid still has a stigma attached. Interestingly, spectacle users still retain a positive image, e.g. they are regarded as intelligent or ‘boffins’, whereas the hearing aid user may be regarded as dumb.

*The miniature hearing aid is the triumph of vanity over utility.*

Bernard Isaacs

There are many other reasons why hearing aid users may not comply with their aid, e.g. unrealistic expectations for ‘perfect hearing’, or the amplification of unwanted sounds etc. These should be addressed during counselling.

3. *Counselling*: in this context, is to educate the patient to let them know how to use their aids and what their limitations are. They will hear sounds that need to be relearned and integrated into the background once more, e.g. fridge noises, clock ticking etc. Sadly, in the UK many people’s rehabilitation, because of cost and time restraints, is restricted to the prescription of a hearing aid.
4. *Lip-reading skills*: can be enhanced to improve the ability to follow a conversation.

*The patient who says I can’t hear you doctor I need my spectacles, teaches the role of vision in hearing.*

Bernard Isaacs

5. *Environmental aids*: these include:

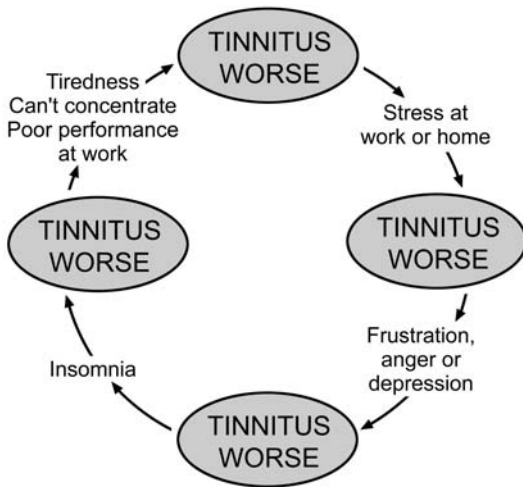
vibrating clock alarms  
doorbells that flash  
telephone/TV amplifiers  
loop systems in banks, concerts, cinemas etc.  
teletext/ceefax subtitles on TV  
typetalk—telephone relay service

6. *Joining a support group*: support, information and advice can be gained from the RNID (tel 0207 296 8000)

## Tinnitus

1. *Treat specific disease* if possible, e.g. Ménière’s syndrome with b-histine (Serc), hypertension with antihypertensive drugs

2. *Avoid situations* which will aggravate tinnitus, e.g.
  - avoid loud noises
    - keep volume low on walkman stereos
    - wear ear protection in noisy occupations
  - avoid ‘absolute silence’ as tinnitus sounds are more likely to emerge. Try to have gentle background music from a radio or TV and try to keep the mind occupied, e.g. reading, as this will distract the mind from the tinnitus
  - avoid caffeine
  - avoid large amounts of alcohol.
3. *Drugs*: have been disappointing. Lignocaine has been given intravenously or via a grommet into the ear with some short-term relief (from less than 1 hour to several days). Anticonvulsants and tranquilisers have also been tried with limited success. In some cases the tinnitus worsened, or their side effects made the cure worse than the disease. Sedatives may have a short-term role when insomnia is a problem because they can break the vicious cycle of tinnitus (see below).
4. *Surgery*: has helped where it has been performed for specific conditions such as otosclerosis. However, when it has been performed purely to cure tinnitus (e.g. dividing the VIIIth nerve), the results are unpredictable and can make the situation worse. It is not recommended for the treatment of tinnitus.
5. *Masking*: is the cancelling out of one sound by another, e.g. when you drown out somebody’s words by shouting over them. This property is used in tinnitus by employing a noise generator, which can be incorporated into a range of aids (e.g. behind-the-ear, in-the-ear), to blot out the tinnitus. A crude bedside test to see if masking may be of benefit is to tune a radio in between stations so that only static is heard. If the static reduces the loudness of the tinnitus, then masking may be effective. A similar test can be performed by turning a water tap ‘full on’. However, audiologists will need to assess patients carefully, so that they can prescribe a noise generator at the appropriate loudness and pitch.
6. *Correct hearing loss*: As tinnitus is associated with hearing loss, correcting the hearing by amplification may help through a number of factors:



**Figure 1.** The vicious circle of tinnitus.

- improving the hearing gives a psychological boost
- background noise is also amplified which may mask tinnitus
- it lessens the attention given to the hearing problem and the tinnitus
- if proper counselling is given during fitting of the aid this will also be of benefit for the tinnitus.

**If tinnitus is particularly bad, hearing aids combined with sound generators are available.**

7. *Counselling:* This is a major component of rehabilitating the tinnitus sufferer. Education about the condition and what to expect is vital. It aims to get the patient to break the vicious circle that perpetuates tinnitus (Figure 1) and to get the brain to reduce its perception of tinnitus so it is seen as less of a problem (this is called Tinnitus Retraining Therapy).

Part of counselling may involve relaxation, or stress reduction techniques. Some people advocate hypnotherapy, yoga etc. and these probably work by diverting the patients' attention from the tinnitus and by providing a large degree of relaxation also.

8. *Joining a support group:* joining a tinnitus support group will help provide support and information for sufferers. There is the British Tinnitus Association (0114 279 6600), who have local branches, and the RNID also have plenty of information.

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- \*Worth a look  
\*\* Good reading  
\*\*\*Essential reading

## SELF-ASSESSMENT QUESTIONS

(Answers are NOT in the text). Some can be found from further reading, others could be the basis for a research project.

1. What does a hearing therapist do and are they effective?
2. Could some elderly patients benefit from programmable hearing aids?
3. What is Pure Tone and Speech Audiometry?
4. How many geriatricians know how to syringe an ear and how many have taught or performed this procedure?
5. What can be done to improve the compliance of the hearing aid user?



# 34. Pruritus

Michael J. Cheesbrough

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*“Tis better than riches to scratch when it itches”.*

Anon.

Dermatology has its own language and the terminology used in the field of pruritus is particularly confusing, not only for non-dermatologists but also for practising dermatologists! This chapter will therefore begin with some essential definitions.

## DEFINITIONS

The word **Pruritus** (L. past participle of *prurire*, to itch) is used to denote both the symptom of itching, which may be found in many skin conditions, and also a provisional diagnosis in which itching is the only manifestation.

**Itch** is more difficult to define. It is generally regarded as a sensation eliciting the desire to scratch. However, as Savin<sup>1</sup> has pointed out, this definition is not entirely satisfactory as there are situations where there is itch without the desire to scratch and conversely where there is scratching without itch.

**Prurigo** is another imprecise term that is used to refer to intensely itchy papules without an obvious local cause. When qualified it is used more specifically, however, to indicate several itchy skin diseases, e.g. Besnier's prurigo (atopic eczema).

**Lichenification** refers to thickened hyperkeratotic skin and accentuated skin creases which appear as a result of repeated scratching. However, this may occur in the absence of any recognised stimulus when it is called **lichen simplex**. When stimulated by an itchy dermatosis such as atopic eczema it is called **secondary lichenification**.

## MECHANISM OF ITCHING

Itching is a common, and often very unpleasant, symptom yet is not well understood and has not received as much scientific investigation as it merits. Difficulties of investigation include lack of standardised itch stimuli and lack of adequate measurement techniques.

It is thought that there are no specific itch receptors but that itch and pain are detected by unspecialised nerve endings found close to the dermo-epidermal junction.

The traditional view has been that itch sensations are passed to the brain via pain fibres but this does not explain why pain and itch can be experienced at the same time, why morphine can alleviate pain yet induce itch, or why itching stimulates scratching whereas pain induces withdrawal. Recently the presence of separate itch and pain fibres has been suggested but this has not yet been conclusively elucidated.

Itch sensations are relayed to the cerebral cortex. Positron-emission tomography suggests that itch is perceived in the anterior cingulate cortex and that the premotor and supplementary motor areas are responsible for initiating scratching. There is much room for research into the pathophysiology of itching.

## CLINICAL ASPECTS

There are many conditions in which itching is perceived. For practical purposes, these can be divided into skin diseases in which there is a visible eruption and other conditions where there is no rash. Often it is easy to decide which category patients fit into but confusion may arise because of

secondary signs of scratching, such as excoriations and staphylococcal infection.

Examples of itchy skin conditions are eczema, scabies, urticaria, insect bites and pemphigoid. I will confine myself to those conditions in which there is no rash. These include medical diseases such as liver and kidney failure, polycythaemia rubra vera and the lymphomas. I will also discuss pruritus as a symptom of senescence, psychogenic pruritus and miscellaneous disorders.

### CAUSES OF PRURITUS

1. Dermatoses, e.g. eczema, scabies, pemphigoid, insect bites and urticaria.
2. No visible skin disease
  - Medical, e.g. uraemia, liver failure, lymphoma, polycythaemia rubra vera and drugs
  - Non-medical, e.g. ‘senile pruritus’

### MEDICAL CAUSES OF PRURITUS

- **Chronic renal failure:** itching is commonly found in chronic (but not acute) renal failure and is well recognised in dialysis patients. The skin may be dry but may often be visibly quite normal. The pathogenesis is uncertain but suggested factors include attenuation of sweat and sebaceous glands, sprouting of nerve fibres in the skin, raised serum parathyroid hormone, aluminium overload and essential fatty deficiency. There has been little new work on the pathogenesis in the past ten years.

The most effective therapy is kidney transplantation.

- **Cholestasis:** as with uraemia, the pathogenesis of cholestatic pruritus has not been elucidated. There is no clear correlation with levels of bile acids. There may be an unknown pruritogenic factor, or an inappropriate response to central opioids, and this is supported by an improvement on taking naloxone, a specific opioid antagonist.

Most patients with cholestatic pruritus have signs of liver disease but patients with primary biliary cirrhosis may present with pruritus before they develop jaundice.

- **Polycythaemia rubra vera:** itching may precede polycythaemia rubra vera or coincide with it. Often the itching may appear when the skin is

in contact with water and is sometimes called ‘bath-time itch’ or ‘aquagenic pruritus’. It can be very distressing. Again, the mechanism is not fully known but it may be due to histamine release. The absence of visible skin signs has been attributed to the slow release and low levels of histamine insufficient to cause urticaria but yet adequate to stimulate nerve endings.

- **Iron deficiency:** this is a well-known association of pruritus. As it is not found in subjects made iron deficient by venesection, the itching may be caused by other factors.
- **Thyrotoxicosis:** hyperthyroidism causes pruritus without visible signs of skin disease whereas hypothyroidism may cause itching as a result of drying out of the skin.
- **Diabetes mellitus and malignancy:** these conditions are said to sometimes present with pruritus without visible skin lesions but the evidence for this is weak.
- **Pruritus of senescence:** this is sometimes called ‘senile pruritus’. It can be almost intolerable to many afflicted patients, yet the cause is usually elusive. In some patients, it is associated with dry skin (shown by fine scaling and cracking) and is helped by emollients. In others, investigation may reveal an underlying medical condition and specific therapy can be offered. An adverse drug reaction should be considered.
- **Psychogenic pruritus:** scrotal and vulval itching is commonly psychogenic although a burning sensation (as in the ‘burning scrotum’ syndrome) and vulvodynia are perhaps more common psychogenic genital manifestations. A rare psychogenic form of pruritus is parasitophobia (delusions of parasitic infestation of the skin). Such patients are convinced that they have insects or mites creeping about their body and usually bring ‘evidence’ in the form of debris contained in a matchbox or other small container. This condition does not respond well to treatment.
- **Miscellaneous causes:** other causes of pruritus include acquired immunodeficiency syndrome, hydroxyethyl starch-induced pruritus, notalgia paraesthetica, and brachioradial pruritus.

### INVESTIGATION OF PRURITUS

A full history is essential for patients with pruritus but only simple basic investigations are required (as

shown in the box). If these turn up any pointers, more detailed investigations can be performed.

#### Investigation of Pruritus

1. Full history and examination.
2. Urinalysis.
3. Blood: urea and electrolytes, liver function tests, full blood count and plasma viscosity, thyroid function tests, ferritin.
4. Chest X-ray.

### TREATMENT OF PRURITUS

This is usually only partially successful and most therapies are not evidence-based; they are used as a result of custom and practice. If a cause can be identified, treatment of this should be addressed. For symptomatic relief, emollients such as bath oil and rub-on preparations, e.g. petroleum jelly or aqueous cream, should be applied—particularly if there are signs of dry skin. Low-sedating antihistamines are not usually of any benefit but sedating antihistamines such as chlorpheniramine (short-acting) or promethazine (long-acting) may be helpful, particularly at night. Doxepin sometimes gives effective symptomatic relief; this is generally known as an antidepressant but also has strong antihistamine properties. It is also used as a topical preparation for localised pruritus of any cause. However, there is the danger of excessive drowsiness and drug interactions in elderly patients with these drugs.

Simple measures such as keeping the home environment cool, application of cold flannels or taking a cool shower can give relief and are safer than drugs. Alternative therapy such as acupuncture, hypnosis, aromatherapy and massage may be considered.

Empirically I occasionally give a patient with intractable pruritus a short reducing course of oral prednisolone and this may give dramatic relief for a short or prolonged time.

Recent papers record successful treatment for pruritus with rifampicin, ondansetron, cyclosporin and naloxone, but these are not yet mainstream therapies.

Lastly, phototherapy with ultraviolet radiation can be effective for all forms of pruritus, including renal and hepatic disease.

### SCOPE FOR RESEARCH

There are many gaps in our knowledge of pruritus. Further work is needed on the neural pathways of itching, mechanisms of renal and cholestatic pruritus, and the causes of pruritus of senescence. New therapies are needed to provide safe but more effective relief. A geriatrician could make important contributions in this field!

### KEY POINTS

1. Pruritus can mean either the symptom of itching or a diagnosis in which itching is present without any visible skin sign.
2. Medical conditions including uraemia, liver disease and polycythaemia rubra vera are common causes of pruritus.
3. The mechanisms of itching are not well understood, and particularly in pruritus of senescence.
4. Treatments for itching leave much to be desired.
5. There is much scope for research in the pathophysiology and treatment of pruritus.

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# 35. Leg ulcers

Michael J. Cheesbrough

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## INTRODUCTION

Leg ulcers affect about 1% of all adults and up to 3.6% of people over the age of 65. They can cause deterioration of general health and impairment of quality of life through pain, social isolation, depression and reduced mobility.

Geriatricians usually see leg ulcers as an incidental finding rather than as a presenting problem. However, leg ulcers are a challenge of holistic medicine rather than simply a problem of wound care. Geriatricians can contribute much to the care of their leg ulcer patients as they have the skills to assess *all* the health problems of the elderly patients and plan comprehensive care.

## WHAT SKILLS DO GERIATRICIANS NEED TO TREAT PATIENTS WITH LEG ULCERS?

Geriatricians should be able to assess patients with leg ulcers, start treatment, deal with aspects of general health and know when to refer to dermatologists or vascular surgeons.

### Assessment

Leg ulcers are often badly treated and generally this is because of inadequate assessment. Many doctors are bewildered by the large number of dressings available; they may assume that a detailed knowledge of wound care is a prerequisite for dealing with leg ulcers and so shy away from involvement.

In fact, expertise and knowledge of dressings are much less important than the ability to perform a meticulous assessment.

A leg ulcer is both a symptom and a sign, not a disease. In every case, therefore, the underlying aetiology must be evaluated before rational treatment can be planned.

Ninety per cent of leg ulcers are vascular in origin of which about 70% are venous, 5% arterial and 15% mixed. The remaining 10% include such causes as skin cancers (e.g. basal cell carcinoma and squamous carcinoma), pyoderma gangrenosum, vasculitis, trauma and infection.

Secondary factors such as immobility, leg oedema, anaemia and sleeping in a chair instead of going to bed are important contributory causes.

### Main Causes of Leg Ulcers

90% ~ vascular of which:

70% venous

15% arterial

5% mixed

10% ~ non-vascular

A competent assessment should produce a primary diagnosis, e.g. venous or arterial, and relevant secondary diagnoses and the doctor should commit himself or herself to a diagnosis. This simply involves taking a history and doing a full medical examination. Investigation and treatment then follow logically; all too frequently common sense and good medicine disappear at the sight of a leg ulcer!

**Venous ulcers** are due to ambulatory hypertension which means that the hydrostatic pressure in the leg veins is higher than normal and there is no reduction in pressure on exercise of the leg muscles. Venous hypertension is transmitted from the veins to the capillaries and produces skin damage. The precise mechanism of ulceration is not known and there are various theories.

### Signs of Venous Disease

1. Affects the gaiter area of the leg
2. Eczema
3. Ankle flare
4. Lipodermatosclerosis (thickening of the dermis and subcutis due to fibrosis)
5. Varicose veins
6. Atrophie blanche (white shiny scar tissue with stippled telangiectasia within)

The cause of venous hypertension is either venous obstruction (usually post-thrombotic) or reflux (regurgitation) due to valvular dysfunction. Ulceration can occur as a result of reflux in either the deep or superficial veins or a combination of both. Before operating on incompetent superficial (varicose) veins it is essential that the surgeon checks that the varicose veins are the cause of the ulcer and not a consequence of deep vein obstruction; in this case the varicose veins are an essential route for venous return.

**Arterial ulcers** are usually caused by arteriosclerosis in large and medium arteries which produces ischaemia in the limb. Typically arterial ulcers are described as occurring distally, in the foot, but in fact they may be found in the lower third of the leg, which is where venous ulcers are found. Patients with diabetes may develop small vessel disease, as well as medium and large vessel ischaemia.

### Signs of Arterial Ulcers

1. 'Punched out' appearance
2. Deep ulceration, sometimes down to tendons
3. Poorly perfused ulcer bed
4. Cold legs
5. Shiny taut skin
6. Dependent rubor
7. Pale or blue feet, white on elevation
8. Gangrenous toes

As venous disease is the commonest cause of leg ulceration, most of this chapter will concentrate on this. Diagnosis of venous ulceration should be based on positive clinical features (see box) supplemented by non-invasive testing, e.g. hand-held doppler, duplex scanning and plethysmography. Details of these methods will be found in the bibliography.

The hand-held doppler instrument is a clinic tool for checking venous and arterial flow. It is used to

measure the systolic arterial pressure in the foot and it is also useful in skilled hands to assess venous obstruction and reflux. Duplex scanning (ultrasonography) is now the standard non-invasive tool for venous assessment and with plethysmography is normally found in a vascular laboratory. With colour coding it can show veins and arteries, whether there is flow, in which direction, and with what velocity.

These and other tools are mainly employed for pre- and post-surgical assessment to clarify anatomy and pathophysiology. However, where there is doubt as to the diagnosis, such as whether the patient's symptoms and signs can be explained by the clinical diagnosis, it may be helpful to refer patients to the vascular laboratory, even if surgery is not contemplated.

Venography has very little part to play in the diagnosis of venous disease as it is invasive and only shows anatomy; it provides little information about function.

The CEAP Classification (1995) takes into account the clinical features (C), aetiology (E), anatomical distribution (A) and pathophysiological dysfunction (P). The clinical classification is based on clinical signs of chronic venous disease in increasing severity of disease. These include:

- Class 0: No signs of venous disease
- Class 2: Telangiectases or reticular veins
- Class 3: Varicose veins
- Class 4: Oedema
- Class 5: Skin changes, e.g. pigmentation, venous eczema, induration (lipodermatosclerosis)
- Class 6: Healed ulceration
- Class 7: Active ulceration

### What Are the Complications of Leg Ulcers?

**Pain:** It was thought that only arterial ulcers were painful, but in fact all ulcers, including venous, can be painful and patients should be offered analgesia appropriate to their suffering. This often includes opiates.

**Anaemia:** This should be suspected in every leg ulcer as ulceration itself can cause the anaemia of chronic disease. Also, some ulcers cause anaemia due to bleeding. Elderly patients are often anaemic for other reasons and since anaemia can cause fatigue, cardiac failure and contribute to oedema, it

should be investigated and treated where possible. Contrary to long-held belief, there is no evidence that normovolaemic anaemia retards wound healing, unlike poor perfusion.<sup>1</sup>

**Depression:** This may be characterised by apathy and self-neglect and such patients may need antidepressants.

**Dermatitis:** Leg ulceration may lead to dermatitis (eczema). This may be localised around the wound (due to irritation from exudate) or may be more extensive. The usual explanation for the latter is 'secondary sensitisation', though the mechanism is speculative.

Therefore the non-ulcerated skin requires care and attention by the use of simple emollients (e.g. yellow soft paraffin) or a paste (e.g. Lassar's paste) around the ulcer edge and topical steroids to heal active eczema. However, patients may become sensitised to their dressings and this should be considered whenever dermatitis develops. Contact allergy can be minimised by using non-sensitising dressings. If suspected, it needs investigation by patch testing.

**Ankle stiffness:** Chronic leg ulceration often leads to stiffness and immobility of the ankle. The precise mechanism is uncertain, but efforts should be made to prevent and treat this. In particular, patients must be advised to walk properly and not hold their ankle rigid, as this reduces or abolishes the calf muscle pump. This pump is essential for venous return.

## Treatment of Leg Ulcers

Once a diagnosis has been made, treatment is usually straightforward. Thus, venous ulcers require reduction of venous pressure by compression or postural drainage, patients with arterial ulcers should be referred to a vascular surgeon and anaemia needs investigating and correcting. The reason for sleeping downstairs in a chair should be investigated so that patients can be enabled to lie flat at night.

### Risk Factors for Poor Healing

- Large ulcer (>10 cm)
- Long-standing ulcer (>1 year)
- Immobility of the patient
- Immobile ankle joint

Compression and postural drainage are the basic tools for treating venous ulcers. The purpose of postural drainage is to reduce gravitational oedema. It may be used before compression or as adjuvant therapy. Whatever the cause of leg ulcers, they will not heal if waterlogged. It is important in the initial assessment to determine whether oedema is peripheral (gravitational), which should respond to postural drainage or compression, or central in origin (e.g. heart failure or hypoproteinaemia) in which case diuretics or more specific therapy may be needed.

The simplest way of arranging postural drainage is to put the patient to bed. This reduces the venous pressure and reverses the hydrostatic forces causing the oedema. Geriatricians are often reluctant to recommend this because of the known hazards of bed-rest. However, I usually prescribe *modified bed rest* which allows the patient up for the toilet and meals and exercise but ensures the horizontal posture for about 20 out of every 24 hours. Standing and sitting are strongly discouraged. If this regimen is hard for patients to follow at home, I will admit them for a few days. Usually only a few days of postural drainage are required to clear the oedema, after which compression therapy can be introduced and the patient sent home.

Sometimes, compression therapy alone will clear leg oedema, in which case postural drainage is not required (other than sleeping flat at night). However, compression bandaging will need changing daily at first until the oedema resolves. After this, once-weekly therapy is usually all that is necessary. Bandages are sometimes changed too frequently; this causes wastage of nursing time and material costs.

Compression therapy reduces venous hypertension, reduces healing times and increases healing rates. How it works at the microscopic level is uncertain but at the macroscopic level it improves venous haemodynamics.

There are several methods of achieving compression therapy; all are effective if applied correctly. Four-layer bandaging is the most well known. Other methods include use of long-stretch bandages, short-stretch bandages, Unna's boot (an American expression indicating a non-elastic casing), intermittent pneumatic compression and elastic stockings over a primary dressing.

Important points to consider with compression therapy are:

- It should be applied by trained people; these are usually nurses but may be relatives, carers, or patients themselves.
- Short-stretch bandages are easier to apply than long-stretch bandages and less likely to cause ischaemia at night.
- It should not be applied to ischaemic legs. The arterial circulation to the limb should be assessed first by clinical history and examination, and measurement of the ankle brachial pressure index (ABPI). To do this, the systolic blood pressure in the arm and foot (usually measured with a hand-held Doppler machine) are compared.  $ABPI = \text{Foot systolic BP} / \text{Brachial systolic BP}$  and in a normal individual the ABPI will be about 1.1. If the ABPI is less than 0.8 extreme caution should be exercised when considering the application of compression therapy because of the risk of aggravating arterial ischaemia. The worst-case scenario is the development of iatrogenic gangrene.
- If the ABPI is more than 1.5, do not assume that the arterial circulation is satisfactory; it means that the arteries are non-compressible, possibly calcified, and the limb may actually be ischaemic. This situation usually occurs in people with diabetes mellitus.
- All doctors and nurses treating leg ulcer patients should know how to use the hand-held Doppler machine.
- The degree of compression achieved is proportional to the number of compression layers.
- Compression is accentuated over bony prominences and reduced in hollows, so padding (e.g. orthopaedic wool which is applied under plaster of Paris) is required to even out the degree of compression.
- The amount of compression is inversely proportional to the size of the leg so there is a danger of too much compression on thin legs and too little on large limbs.

### What Should I Put on the Ulcer Itself?

The dressing applied to the ulcer is called the primary dressing and all the other pads and bandages are called secondary dressings. There is no evidence to show that the choice of primary dressing affects healing rates and choice is therefore determined by other considerations.

In the original 4-layer system a simple NA (non-adherent) dressing was applied directly on to the ulcer, followed by orthopaedic wool and a light cotton bandage to hold it in place. These were chosen as they were cheap, easily accessible, non-sensitising, not painful to remove, easily removed, and absorbent. The two elastic layers cover these dressings.

Wounds heal best if kept moist and warm and disturbed as little as possible. Unless wound discharge is heavy, dressings can be left in place for 2 weeks at a time. Unfortunately, many are changed too often to the detriment of the ulcer and the nurse's time.

It is possible to manage with only NA dressings and absorbent wool. However, a small range of primary dressings allows more flexibility. If the wound discharges a lot, the normal surrounding skin should be protected with paste, e.g. ichthammol or Lassar's paste. If there is secondary eczema, a topical steroid may be used. For dry skin on the leg, liquid paraffin or yellow soft paraffin will protect and hydrate the affected skin.

### What If the Ulcer is Infected?

A lot of money is wasted taking and analysing bacteriology swabs. All ulcers will be contaminated with bacteria and it is not possible or desirable to achieve a sterile ulcer bed.

Topical antibiotics should be avoided as they encourage bacterial resistance, sensitise and cause contact dermatitis. They do not aid healing.

If cellulitis develops, systemic antibiotics are required. Since the cause is usually staphylococcus aureus or  $\beta$ -haemolytic streptococcus, oral or intravenous flucloxacillin is required in most cases.

Almost more important than antibiotics for tissue infection is **elevation of the affected limb**. This simple but essential measure is sadly often neglected. It is a well-known surgical principle that infected limbs should be elevated and this reduces pain and oedema. Cellulitis of the leg in a patient nursed in a chair may fail to resolve despite appropriate antibiotic therapy, only to get better on elevation of the limb. There does not, however, appear to be any published evidence to support this intervention.

## How Should I Deal with Slough?

The first task is drainage of oedema. If this is not eliminated and controlled, removal of slough is almost impossible. I presume this is because natural elimination of slough is promoted by autolysis, which is an oxygen-dependent process. Once the oedema is drained, slough can be removed in one of several ways, e.g. surgical debridement, autolysis aided by an interactive dressing (such as an alginate or hydrocolloid), or lastly larval (maggot) therapy. A combination of methods can also be used.

Larval therapy is efficient, quick-acting and cost effective.<sup>2</sup> It is well tolerated by most patients though some are squeamish. The larvae can be ordered from Bridgend (The Surgical Materials Testing Laboratory, Bridgend and District Trust, Prince of Wales Hospital, Coity Road, Bridgend, CF31 1RQ) and arrive within 48 hours. They are applied carefully to the ulcer bed and the surrounding skin is covered, protected with a hydrocolloid dressing cut to the shape of the ulcer in order to confine the larvae to the ulcer bed. The wound is covered with gauze padding and a light bandage. It is important that the coverings are breathable, otherwise the maggots die. The dressings are normally removed after 3 days, by which time the maggots will have visibly grown. They are then easily removed from the wound manually or by irrigation and placed in a yellow bag for disposal.

The sterile blow-fly maggots chosen for wound therapy are harmless to living tissue and do not metamorphose into flies in the time between application and disposal.

## What Are the General Health Issues?

A holistic assessment of leg ulcer patients will reveal factors that affect the ability to heal and that can be ameliorated. Examples are:

- Anaemia: this may be secondary to the ulcer itself and may require blood transfusion but may also be due to coincidental causes such as poor diet or bleeding. Appropriate investigation and correction will aid healing of the ulcer.
- A poor diet may result from apathy, immobility, dementia, poverty or ignorance.
- Immobility is common in leg ulcer patients and may be due to arthritis, obesity, stroke or an assumption that 'rest' is good for healing of ulcers.

- One textbook states that all patients with leg ulcers should have a rectal examination! This may seem extreme but abdominal palpation is desirable since pelvic tumours can cause venous obstruction and are potentially treatable.

### Causes of Non-Healing

- Inadequate assessment
- Inadequate compression
- Persistent oedema
- Calcification in the ulcer bed; causes a mechanical barrier to vascularisation

## When Should I Refer a Patient with a Leg Ulcer?

If initial assessment suggests a leg ulcer is venous in origin, with no complications, treatment can be instituted immediately via district or practice nurses. Indications for referral to a dermatologist would include non-healing after 3 months of compression therapy, development of dermatitis or doubt as to the diagnosis. All patients with arterial ulcers should be referred to a vascular surgeon for assessment and possible surgical intervention (e.g. angioplasty, arterial by-pass or arterial reconstruction)

## How Should Leg Ulcer Services be Organised?

This is controversial but the trend is towards assessment and treatment at home or in locality clinics. Only those who have failed to respond or have complicated problems are referred to hospital.

There is a need for training and some universities offer courses which cover the theory and practice of leg ulcer management (ENB N18). A nurse leg ulcer specialist would be expected to have this qualification.

One successful model of care is the setting up of three or four locality clinics staffed by nurse specialists, where patients are assessed and their treatment planned. This is then implemented by district or practice nurses. The skills of the community nurses are developed and enlarged by systematic training carried out by the nurse specialists.

**KEY POINTS**

1. Full assessment is the priority in the management of patients with leg ulcers.
2. 90% of leg ulcers are vascular in origin and 70% are venous.
3. Most patients with leg ulcers can be managed by geriatricians, as part of a multidisciplinary team.
4. Patients with arterial ulcers should be referred to a vascular surgeon, and those without a diagnosis, those who fail to improve with treatment, and those with a non-vascular cause should be referred to a dermatologist.
5. The mainstay of treatment for venous ulcers is compression therapy.

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**RECOMMENDED READING**

- Ruckley, C.V., Fowkes, F.G.R. and Bradbury, A.W. (1999) *Venous Disease: Epidemiology, Management and Delivery of Care*, Springer-Verlag, London Ltd.  
This is a 270-page text covering every aspect of venous disease and essential reading for every clinician concerned with the management of venous leg ulcers.\*\*\*
- Lunt, M.J. (1999) Review of duplex and colour Doppler imaging of lower-limb arteries and veins. *Journal of Tissue Viability*, **9**: 45–55.  
Ultrasonic imaging is the mainstay of non-invasive imaging of the venous and arterial systems and this article describes the theory, techniques, strengths and limitations of ultrasonography.\*\*\*
- Clinical Practice Guidelines: The management of patients with venous leg ulcers. Recommendations for assessment, compression therapy, cleansing, debridement, dressing, contact sensitivity, training/education and quality assurance.* (1998).  
Produced by the RCN Institute, Centre of Evidence-Based Nursing, University of York and the School of Nursing, Midwifery and Health Visiting, University of Manchester. ISBN 1-873853-78-5  
This booklet gives straightforward guidelines of the management of all aspects of venous leg ulcers with comprehensive references and evidence tables. It also includes the 'Effective HealthCare' bulletin on Compression therapy.\*\*\*
- The Management of Chronic Venous Disorders of the Leg: An Evidence-Based Report of an International Task Force (1999) *Phlebology*, **14**, Supplement 1.  
This is more comprehensive than The Clinical Practice Guidelines (No 3 above) and deals with epidemiology, economic outcomes, clinical outcomes and quality of life, diagnosis and treatment as well as highlighting priorities for research. 126 pages.\*\*

# 36. Clinical aspects of pressure sores

**Mahendra Gonsalkorale**

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It is more rewarding and cost-effective to prevent pressure sores than to treat established pressure sores. Pressure sores cause misery, prolong hospital stay, cost money, can lead to litigation, and are largely preventable.

## **HISTORICAL ASPECTS**

In 1815, William Heberden Junior recognised the influence of pressure on the causation of bed sores. He wrote “There is no one in the habit of attending the sick but must have reason to deplore the wretched condition of those who, being bed ridden through accident or infirmity, have contracted sores of a very painful and dangerous kind by long pressure, especially if the patient lies in the wet and filth of his own body which he is unable to restrain”.<sup>1</sup> Sir James Paget in 1873 wrote “First of all look to the bed. Good bed-making is an indispensable thing in the prevention of bed sores. Several beds have been made especially for this purpose, of which the best is Dr Arnott’s. It consists of a chest full of water; top of this is a waterproof sheet and over this an ordinary sheet on which the patient is laid. Here the patient is absolutely floating on the water. A patient might lie in this for years and never have a bed sore”.<sup>2</sup> Jean Marie Charcot’s observations in 1868 that patients with spinal injuries develop pressure sores because of trophic disturbances<sup>3</sup> led unfortunately to a long period of nihilistic belief that little could be done to prevent bed sores. In 1915, Pierre Marie and Gustav Roussy made a powerful plea for better management, with their central theme being the alleviation of pressure and the prevention of infection.

Florence Nightingale is given credit for recognising that good nursing care could prevent pressure sores. The medical profession has been slow to show an interest in this field, which largely remained the domain of nurses.

## **THE SIZE OF THE PROBLEM**

The prevalence of pressure sores in hospitals vary from 5–15% in surveys.<sup>4,5,6</sup> A recent survey estimates that new pressure sores occur in 4–10% of patients admitted to a UK District General Hospital, depending on the case-mix.<sup>7</sup> The cost of preventing and treating pressure sores in a 600-bedded large general hospital is between £600,000 and £3 million per year.<sup>8</sup>

## **WHY ARE ELDERLY PATIENTS MORE PRONE TO DEVELOP PRESSURE SORES?**

1. Age-related changes in the skin, e.g. changes in collagen synthesis resulting in lower mechanical strength of tissues, decrease in elastin content, loss of dermal vessels, thinning of the epidermis, flattening of the dermal-epidermal junction and increased skin permeability.
2. Ill old people are prone to vascular insufficiency, immobility, malnutrition, incontinence, hypoxia, and sedative drug use.

## **WHAT IS A PRESSURE SORE?**

A pressure sore is an ischaemic skin ulcer of variable depth caused by the application of excessive pressure



on skin and subcutaneous tissue. What determines whether the skin breaks down under these circumstances is the relationship between the health of the skin (susceptibility) and the degree and duration of pressure (the insult).

Apart from direct pressure, which leads to capillary occlusion, shearing forces and direct frictional burns on the skin are important factors. Shear forces cause capillary wall damage, with thrombotic occlusion. Friction leads to direct trauma to the skin. Examples of friction sores are those caused on the heels by dragging patients upwards when they slide down on the mattress. The correct way to move such patients is to lift them up and place them higher up the bed. Dragging patients up also leads to shear forces being generated in the layers of tissue between the ischial tuberosities and the skin.

Pressure sores most commonly develop over bony prominences as very high occlusive pressures are reached when the skin gets sandwiched between the bone and the surface on which the patient lies. The commonest areas for pressure sore formation are the sacrum, ischial tuberosities, greater trochanters and heels. Patients lying on mattresses do not spread their weight evenly on the surface (unless it is a completely deformable surface like a water mattress), but do so mainly on many bony points, e.g. when lying supine, the main points are the heels, sacrum, scapulae, elbows and occiput.

The position in which a patient is nursed determines the sites at risk of developing pressure sores.

**Supine position:** The sacrum, heels and occiput (pressures of 40–60 mmHg).

**Prone position:** The iliac crests, the knees and chest (approximately 50 mmHg).

**Lateral position:** Greater trochanter, lateral malleoli, shoulders.

**Seated:** Ischial tuberosities (40–60 mmHg).

Other sites at risk are the lateral malleoli, elbows, pre tibial area and ribs. Unusual sites should suggest pressure from external objects, e.g. inner surface of thigh from catheters, on temples from spectacle frames, mastoids from hearing aids.

### CAN PRESSURE SORES BE PREVENTED?

The answer is almost always yes. How can this be achieved?

- Increased awareness of the risk of pressure sores.
- Increased knowledge of causes and prevention of pressure sores amongst staff.
- Recognition and acceptance that all the members of the healthcare team (including the patient and the carer) have a role to play.
- Investment in preventive measures (proper mattresses, seating cushions etc.).
- A commitment by management to give manpower and financial support.

Even with good preventive practices, in some very ill patients with multiple risk factors, it can be difficult or impossible to prevent pressure sores.

### CAN THOSE AT RISK BE IDENTIFIED?

This can be done in various ways. The most widely applied tools are pressure sore risk estimators such as the Norton, Douglas and Waterlow scales. These scales are similar in that points are awarded for a series of risk items concerning the patient and a total is calculated. They are not interval scales and a change from one point to another has no precise significance. The different items are weighted only in some scales. The total score provides some objective measure of risk. All these instruments have their limitations and are usually interpreted taking into account 'clinical judgement'. There is little evidence that these risk scales are better than clinical judgement and that their use produces better outcomes.<sup>9</sup> In units that use a risk calculator as routine, the incidence of pressure sores is lower than in units that do not. This is probably because those that do are more motivated and geared towards prevention. In addition to this, when a scale is used, the clinician is looking at known risk factors and dealing with them.

#### Practice Point

A practical way of constructing the right environment to prevent pressure sores is to set up a team consisting of people drawn from the following professions: doctors, nurses, physiotherapists, occupational therapists, pharmacists, dieticians, and ideally a person responsible for purchase of equipment in the

Trust. The team must have management backing and set up local protocols and procedures for the prevention and treatment of pressure sores.

## FACTORS THAT MAY CONTRIBUTE TO THE FORMATION OF PRESSURE SORES

### Extrinsic Factors

- Nature of support surface on which patient is nursed, e.g. a mattress, or an overlay spread over the mattress.
- Frequency of turning of patient, which is often related to staffing levels.
- How a patient is handled by staff (techniques of lifting and turning).
- Presence in the bed of urine, faeces, bed sheet folds, food crumbs and talcum powder.

### Intrinsic Factors

1. Blood supply.
2. Nutritional state.
3. Mobility.
4. Mental state and level of consciousness.
5. Physical state, including loss of subcutaneous fat, generalised wasting.
6. Age.
7. Sensory loss.
8. Pain.
9. Coexisting medical conditions like diabetes mellitus, chronic lung disease, heart failure, anaemia etc.

#### Practice Point

Any ill hospitalised elderly patient who is confined to bed should be regarded as being at risk of developing pressure sores.

#### Practice Point

Prevention of pressure sores is a 24-hour job; regular turning and the use of specialised mattresses are of value while the patient is confined to bed. Once sitting out, attention must be paid to the pressure-relieving characteristics of the seat.

#### Practice Point

Always show an interest in aspects of prevention when looking at patients with your team, e.g. show an interest in the support surface, look at the risk assessment done by the nurses, examine the areas of skin at risk. Your interest will have a positive effect on the whole unit.

#### Practice Point

The underlying damage to tissue may have occurred before the patient arrives in the ward. It may have occurred while the patient was lying on a hard trolley in the Accident & Emergency department or at home while lying on the floor. Always record the state of the skin on arrival and note any risk factors that may have operated before arrival. Never be judgmental about your nursing colleagues; a sore may have nothing to do with poor nursing.

## MANAGEMENT PLAN TO PREVENT SORES

A plan of action must follow to prevent pressure sore formation. This must include:

1. Decision on the kind of support surface the patient needs in order to minimise the risk of developing a pressure sore.
2. Identification and action on intrinsic factors that can be influenced, e.g. correct anaemia, add nutritional supplements, treat heart failure, COPD etc.
3. Decision on how frequently the patient has to be turned. The two-hourly turning or repositioning regime that is widely used had its origins in Stoke Mandeville Hospital where they determined empirically that patients turned every two hours did not develop decubitus ulcers.<sup>10</sup> (Decubitus ulcer is an alternative term for a pressure sore.) There are no studies to determine the optimum turning interval. It is probably impossible to arrive at a precise figure, as individual patients and their environments differ widely. The two-hourly turn is a rough guide and each patient's needs should be individually determined.

4. A review process. Regular review includes re-examining risk factors and looking at areas of skin at risk for early warning signs, e.g. blanching erythema (an erythematous (red) area which becomes white (blanches) on application of digital pressure with the colour returning on release of pressure.)
5. Application of agreed practices to prevent friction and shear forces on the body. Lifting and handling guidelines are now in place in most Trusts.
6. Ensuring that the patient's skin is protected from urine and faeces, food crumbs and folds in draw sheets. Attention to detail is important.
7. The use of positioning devices such as pillows or foam wedges to keep bony prominences away from each other, e.g. use of a pillow to separate knees in patients with adductor spasm.
8. Use of self-help devices such as monkey poles with slings, rope ladders which would enable the patient to change the position of areas at risk.
9. The recognition that patients who need to sit out of bed should be provided with proper pressure-relief seating cushions and should shift their position regularly. They should avoid long periods of uninterrupted sitting.

### WHAT KINDS OF SUPPORT SURFACES ARE AVAILABLE AND HOW DO YOU DECIDE WHICH ONE TO USE?

Support surfaces include mattresses (patients nursed in beds) and seating cushions (patients nursed in chairs, including wheel chairs). The commonest support surface for the recumbent patient is an ordinary mattress. Overlays are lightweight coverings placed directly on a mattress to make it more effective in spreading body weight over a larger area.

The standard hospital mattress is unsuitable for nursing moderate to high-risk patients. There are many trials demonstrating the superiority of high-specification foam mattresses over the standard hospital mattress.<sup>11</sup> However, there is no accepted definition of what a standard hospital mattress is and there is wide variation in them.

Two types of protective support surfaces are available.

1. Static surfaces
2. Dynamic surfaces

**Static Surfaces** (also called constant low-pressure devices)

Surface which deform and allow the patient to gently “sink in” so that the weight is distributed over a larger surface area, thereby reducing the point pressure. The static surface could be the mattress itself or an overlay, which is laid on top of the mattress. They can be classified according to their construction, e.g. foam, foam and air, foam and gel, profiled foam (shaped to prevent patients from sliding), hammocks, air suspension, water suspension and air-particulate suspension/air-fluidised.

The mean vertical pressure over the contact surface is a function of the total body weight and the surface area in contact with the support surface. The greater the surface area of contact, the lesser the mean contact pressure. The contact pressure (pressure between the patient and the surface) is commonly referred to as interface pressure. Interface pressure = patient weight/contact surface area.

#### Practice Point

Static mattresses have a finite useful life. With continued use, their efficiency deteriorates. With prolonged use, they often develop a depressed area (indentation) in the shape of the human body. If a patient of a different size and shape is then put on it, there may be areas of high pressure where the patient does not quite ‘fit in’. Their purchase date must be written in indelible ink and they must be replaced according to guidelines. Most manufacturers provide information on mattress life but they must be inspected regularly as their life depends on the types of patients who have been placed on them and how often they have been turned.

*Water beds (a type of constant low pressure device)*

They are cumbersome, make it difficult to nurse patients and have been largely superseded by alternating pressure mattresses. They consisted of a tank in which a plastic cushion filled with water was placed. The water is kept warm electrically. It was difficult to nurse patients on this device and patients complained of feeling sea-sick. Water beds are rarely used now.

### Dynamic surfaces (alternating pressure devices)

These are mechanically driven, so the area of contact with the patient changes from time to time. This ensures that no part of the body is subject to high pressure (interface pressure) for too long. The critical measure is the duration of pressure multiplied by the mean pressure. The critical value can be reached by an increase of either pressure or time. The most popular mattresses in use are the alternating pressure mattress systems. They can be either an overlay on a normal mattress (c.f. static overlays on normal mattresses) or mattresses in their own right. The earliest effective alternating system was the simple ripple system.<sup>12</sup> A recent prospective study comparing seven mattress overlays again demonstrated that only the large cell Ripplebed mattress effectively prevented and healed sores in the elderly patients studied.<sup>13</sup> There are now more sophisticated and reliable systems like the Nimbus or Pegasus. Their prices vary and little reliable evidence is available for their relative efficacy.

Interface pressure measurements are often quoted by manufacturers as a surrogate measure of clinical effectiveness, but there are no clinical studies to support this. More sophisticated methods involve continuous interface pressure measurement. This enables the proportion of time during a cycle where the interface pressure is below an accepted threshold to be determined.<sup>14</sup>

*Other complex surfaces* include the low air loss bed (effective but costly), air fluidised beds, sand beds, automated assisted turning beds, and net suspension beds. The low air loss bed is often used in intensive care units. It is effective but no comparative studies have been done between low air loss and alternating pressure mattresses.

There are very few randomised control trials to help us decide on the best support surface. The limitations of studies are described in the Cochrane Systematic review by Cullum *et al.*<sup>11</sup> In general, for medium to high-risk patients, high-specification constant low pressure mattresses are superior to the standard hospital mattress. The relative merits of alternating pressure devices are not very clear. Low air loss beds are effective in preventing and treating pressure sores but there are no trials to compare these very expensive beds with the far less costly alternating pressure systems. In the current state of

knowledge, alternating pressure mattresses should generally be used for very high-risk patients. A good policy is to nurse medium to high-risk patients initially on high-specification constant pressure surfaces and be extremely vigilant about observing the skin at regular intervals, and transfer on to an alternating pressure air mattress if there are early indications of possible skin breakdown. However, a policy of using an alternating pressure air mattress immediately for high-risk patients is acceptable.

### CLASSIFICATION OF ESTABLISHED PRESSURE SORES

- Stage 0 Skin hyperaemia only. Red area, which blanches on digital pressure, showing that there is vasodilatation but no extravasation of blood. At this stage, it is really not a sore.
- Stage 1 Non-blanching erythema. This shows that there is capillary damage with extravasation of blood into the tissues.
- Stage 2 Partial thickness skin loss, involving epidermis and dermis.
- Stage 3 Full thickness skin loss with extension to subcutaneous tissues but not extending beyond deep fascia to the underlying bone, tendon or joint capsule.
- Stage 4 Full thickness skin loss, with extension to and beyond deep fascia involving bone, tendon or joint capsules.

### WOUND CARE MYTHOLOGY

- There is no evidence that rubbing the skin regularly to make it "red" prevents pressure sores; indeed it could make it worse.
- There is no conclusive evidence that some idiosyncratic practices like applying honey, sugar, egg yolk, yoghurt does any good. The use of sugar and honey is a very old practice dating back to the ancient Egyptians who packed honey combined with lard or resin into wounds sustained in battle. The low pH is unfavourable for bacterial growth. Sugar in high concentration has also been shown to inhibit bacterial growth. The high osmotic pressure draws in fluid. There are some studies suggesting that sugar and honey may have beneficial effects but a review

of the published evidence in 1988 concluded that “based upon available information the use of sugar as the sole treatment of wounds cannot be recommended”.<sup>15</sup>

- The old adage that “it does not matter what you put on a sore so long as you don’t put the patient on it” is only partly true, as some topical applications are harmful.
- There are 50 topical preparations used without any scientific basis.<sup>16</sup>
- “Ancient Egyptians bound ox fat to wounds, and Indian Physicians of the 4th Century BC auscultated wounds to detect the *vayu* (inner wind) that caused the wound and would indicate its prognosis. A 15th century recipe for wound care mixed March Barley and one-half bushel of toads. This mixture was boiled together and fed to a hen that had newly hatched chicks. The patient then ate the hen”.<sup>17</sup>

## TREATMENT OF ESTABLISHED PRESSURE SORES

### Three Main Principles

1. **Ensure relief of pressure.** This allows tissue perfusion, oxygenation and promotes healing. Support surfaces are important in prevention but are also of importance in managing the patient with an established sore.
2. **Treat predisposing factors.** Management of underlying medical conditions to provide the best conditions for wound healing by ensuring a good supply of oxygen, nutrients, and vitamins is a common-sense approach although there is no hard evidence that wound healing is influenced by these measures. Attention to nutritional intake, correction of anaemia, dehydration, management of underlying medical problems such as diabetes mellitus, heart failure, obstructive airways disease may be required in individual patients. There is no evidence that routine zinc administration promotes pressure sore healing, unless the patient is zinc deficient. Vitamin C is essential for the synthesis of collagen. Vitamin C deficiency can impair healing but there is no evidence that large doses of vitamin C improve healing. The empirical administration of a daily multivitamin preparation sufficient to provide the normal daily requirement is advised in poorly nourished patients.
3. **Care of the wound.** This is essential before applying any dressing. Cleansing of the wound using cleansing agents (normal saline is probably the safest) and removal of dead tissue by wound debridement is essential, as dead tissue creates a physical barrier against tissue repair. Cleansing is followed by the application of a suitable dressing to provide the ideal moist environment for wound healing and to protect the wound from outside contamination. The use of hydrogen peroxide and eusol for cleansing wounds is harmful as they are toxic and have an adverse effect on wound healing.

### Types of Dressings

#### *Occlusive and semi-occlusive dressings*

These create a moist micro-environment which promotes wound healing. Occlusive dressings are sometimes referred to as moisture-retaining dressings. Non-occlusive dressings are unsuitable but can be used as secondary dressing over the primary (next to the wound surface) occlusive dressing.

Types of occlusive dressings are:

- **Hydrocolloid dressings.** These are dressings manufactured from gel-forming agents combined with other materials, such as elastomers and adhesives. They are typically in the form of a flexible foam or film sheet, coated with a layer of hydrocolloid base and covered with a piece of release paper. It can be used for dry wounds and, by absorbing fluid, maintains a moist environment. The area in contact with the wound always remains wet so that the dressing can be removed painlessly. The base is also provided as granules or paste which can be applied to the wound with the sheet to improve absorbency, e.g. Granuflex, Comfeel.
- **Hydrogel dressings.** These are dressings containing hydrophilic insoluble polymers which interact with aqueous solutions and retain significant volumes of water, e.g. Geliperme. Hydrogels tend to become dry earlier than hydrocolloids and may need more frequent changes. They are very soothing and easy to remove. Accurate placement and retention can also be a problem. Hydrogels also come in an

amorphous form. When fluid is absorbed, the viscosity of the hydrogel is reduced and it flows to take up the shape of the wound. E.g. Scherisorb.

- **Semi-permeable film dressings**, e.g. Tegaderm, Opsite. These are said to be permeable to water and oxygen but impermeable to bacteria. They provide an effective barrier against contamination and maintain a moist environment. Suitable for superficial pressure sores.
- **Low adherent dressings**, e.g. Silicone sodium and Mepitel. No particular advantage.
- **Alginates**. These are extracted from seaweed and consist of sodium (soluble) and calcium (insoluble) salts. They are used in wounds with heavy exudation. They absorb the exudate and form a gel which maintains moisture. They are unsuitable for dry wounds. E.g. Kaltostat and Sorbsan.
- **Foam dressings**. Come as a product which is poured into a cavity wound where it expands to four times its original volume and forms into a sponge by releasing hydrogen (Silastic foam or Cavicare), and as a dressing (Lyof foam).
- **Odour-absorbing dressings**. Some sores are malodorous and unpleasant for the patient, staff and visitors. Dressings incorporating activated charcoal, which acts as a filter, are useful in this situation, e.g. Kaltocarb and Actisorb.

There is no good evidence on the relative merits of various dressings. In general, dressings which provide a moist environment promote wound healing. There is no justification in using gauze directly on pressure sores, as it sheds fibres into the wound, does not maintain a moist environment and can be intensely painful when removed.

Antibiotics are rarely necessary. The only indication is the presence of serious wound infection. Topical antibiotics should not be used. They only sensitise and do not provide enough antimicrobial activity to overcome infection. Routine swabs for bacterial culture is unnecessary and wasteful. Almost all wounds are colonised with bacteria. A wound swab is only indicated where infection is suspected by the presence of clinical signs or where infection control requires identification of MRSA (Methicillin Resistant Staphylococcus Aureus) contamination. Infection can be suspected by the presence of systemic signs

like pyrexia or local signs like cellulitis and induration around the sore. It may also be suspected when there is delayed healing, unusually friable granulation tissue or wound breakdown. Signs such as bad odour or discolouration can be misleading. Familiarity and experience could help in identifying infection. If a local tissue viability nurse specialist is available, she could be an extremely valuable resource. In general, in the absence of clear local signs around the ulcer or systemic signs of infection, systemic antibiotics should be withheld. Unnecessary wound swab specimens to the laboratory burdens an already over-stressed department and unnecessary use of antibiotics helps spread drug-resistant bacteria.

#### *Use of enzymes*

In theory, proteolytic enzymes are useful in removing necrotic tissue. The most widely used preparation is Varidase, which contains a mixture of streptokinase and streptodornase. Varidase is an expensive product and there is little evidence to support its routine use. There may be a place for its use in dry black eschars, especially in the heels. Before it is applied, however, the dead skin must be scored (cross-hatched) with a scalpel to allow penetration of the enzyme. Some inject Varidase under the dead skin—a practice which must be performed only by a skilled practitioner.

Management of pressure sores on the above principles should yield satisfying results. However, because of insufficient research in this area, many less well-established methods are in use. These include thermal therapy (heat lamps), electrical stimulation, electromagnetic stimulation, ultrasound and oxygen therapy. There is insufficient evidence to recommend these. The only other evidence-based intervention in pressure sore management is surgical treatment.

### **Surgical Treatment of Pressure Sores**

Wound debridement may be required to remove dead tissue in sores of grade 2 or more. More intensive surgical management, e.g. the use of skin flaps, excision of pressure sore followed at a later stage by closure, is sometimes necessary for large cavities to facilitate the healing process. This requires referral to a plastic surgeon.

The wound should be clean and free of infection. Surgical treatment consists of excision of the ulcer followed by closure at a later stage. Closure is by direct closure, use of cutaneous flaps or use of myocutaneous flaps.

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## RECOMMENDED READING

The reader is advised to read the most up-to-date and comprehensive review of the effectiveness of pressure sore prevention using beds, mattresses and cushions in the Cochrane database. The systematic review by Cullum and colleagues was last updated in May 1999.

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## SELF-ASSESSMENT QUESTIONS

State whether True or False for each item.

1. The most likely areas of the body to develop pressure sores in an elderly patient with pneumonia being nursed on his side are
  - a) The sacrum
  - b) The ischial tuberosities
  - c) The greater trochanter
  - d) The lateral malleolus
  - e) The occiput.
2. In treating pressure sores,
  - a) Pressure sores should be kept open without dressings to encourage the formation of a scab to aid wound healing.
  - b) A clean sterile gauze dressing is useful as a wound dressing.
  - c) Topical antibiotics should not be used if a wound looks infected.
  - d) Occlusive dressings should be removed daily to inspect the wound.
  - e) High dose vitamin C and Zinc should be given to all patients with pressure sores.

3. a) Low interface pressures quoted by manufacturers of alternating pressure air mattresses are a reliable way of selecting the most effective one.
- b) Use of dynamic support surfaces eliminates the need for regular turning of patients.
- c) The standard hospital mattress is suitable for medium to high-risk patients provided the patients are turned regularly.
- d) Expensive equipment like low air loss mattresses is essential in order to prevent pressure sores.
- e) With good nursing and medical practice, most pressure sores can be prevented.





## 37. Preventing infections: Clostridium Difficile Infection (CDI), Methicillin Resistant Staphylococcus Aureus (MRSA) and Influenza and Pneumococcal Bacteraemia

Sheldon Stone

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### OVERVIEW

The NHS National Priorities Guidance 1999–2002 includes reduction of both Hospital Acquired (nosocomial) Infection (HAI) and Antimicrobial Resistance (AMR). It specifies that this be achieved in three ways:

1. Reduction of inappropriate use of antibiotics
2. Strengthening basic infection control practices (handwashing and ward cleaning)
3. Surveillance of HAI and AMR rates.

In the UK, prevention of MRSA and Clostridium Difficile Infection (CDI), both of which are common in elderly patients, may have a pivotal role to play in achieving these aims. CDI is an increasing cause of HAI, with a six-fold rise from 1990–3, and a five-fold rise from 1993–6. MRSA is now responsible for 70% and 50% of staphylococcal wound infections and bacteraemias respectively. CDI is an ‘unwanted pathogen’, a consequence of broad spectrum (especially cephalosporin) antibiotic use, and patients’ skin flora have been shown to change from methicillin sensitive (MSSA) to resistant Staphylococcus aureus, on exposure to prophylactic cephalosporin regimens in hospital. Same strain transmission of CD correlates strongly with the intensity of environmental contamination, and can be reduced by thorough regular environmental cleaning. Both organisms are carried on the hands of

health care workers, even after minimal contact (e.g. returning drug charts), and the rate of CDI and of MRSA acquisition may be a surrogate marker for cross-infection. Hand-carriage is virtually eradicated after washing with antiseptic handrub. There is evidence that antibiotic policies, surveillance and feedback of CDI or MRSA rates, reduce levels of CDI and, to some extent, MRSA. Both organisms are highly relevant to older patients as the mean age of those with CDI is 75, and 76% of those with MRSA are more than 65 years old.

Influenza and pneumonia are also common in old age. In the USA, where Influenza and Pneumonia are the 5th leading cause of death in those over 65, a key National Health Objective for 2000 is to increase vaccination for both diseases to at least 60%. There is no such objective in the UK for pneumococcal vaccination, but in the last year it has become policy to vaccinate 70% of all over 65s for influenza. Elderly flu victims are 25 times more likely to be admitted to hospital and one in four suffer complications. Mortality in elderly flu patients with just one of diabetes mellitus, cardiac or respiratory disease is nearly 25 times higher than in younger age groups. Hospital admissions for pneumonia are also higher in those aged 75 or more, by a factor of 12. The most common pathogen in pneumonia remains *Streptococcus pneumoniae*, with bacteraemia affecting 20% of cases and being associated with a 25–30% mortality. Influenza vaccination reduces death, pneumonia and

hospital admission substantially, and pneumococcal vaccination reduces bacteraemia. For both conditions, prevention of such outcomes is better than cure and UK health priorities may need to change to reflect this.

This chapter summarises management of CDI, presents the evidence that antibiotic restriction, environmental decontamination and basic hygiene measure prevent CDI, discusses the pros and cons of MRSA management and presents the case for setting explicit goals for pneumococcal as well as influenza vaccination of the elderly population.

## PREVENTION AND MANAGEMENT OF CLOSTRIDIUM DIFFICILE INFECTION

### Organism, Pathogenesis, Virulence and Symptoms

*C. difficile* is a Gram positive anaerobe, forming spores that last a long time in the environment. Once ingested, it grows in gastrointestinal tract of patients whose normal bowel flora have been disrupted by antibiotics, especially third-generation cephalosporins. An adhesin (surface protein) aids colonisation, which is followed by growth and toxin (A+B) production. Toxin production is responsible for the symptoms, which may vary from mild diarrhoea to fulminating pseudomembranous colitis, which is rare. Directly attributable mortality is about 3%, but the average increase in length of stay is 21 days at an average cost of £4000. The presence of either toxin in stool is the single best diagnostic test, and culturing the organisms is usually only done for typing. Virulence relates to adherence, toxin production and production of collagenase that attacks the bowel mucosa. Not all strains are equally virulent. Asymptomatic carriage (of toxigenic or non-toxigenic strains) occurs in 3–15% of healthy volunteers, of all ages.

### Epidemiology: Antibiotics

A recent study compared the relative risk of acquiring CDI with that of patients on amoxicillin or ampicillin, controlling for drug combinations. Cefotaxime carried a RR of 27.5, ceftriaxone 15.1, cefuroxime 8.6 and Ceftazidime 6.4. Moreover, in a large group of normal volunteers, 25% of those

receiving just one iv dose of cephalosporin were reported to excrete CD in their stool over the next 2 weeks. This was not so for other antibiotics.

### Epidemiology: Age

Swedish and British studies show that elderly people are particularly prone to CDI. Reduced renal and increased biliary clearance of cephalosporins in elderly people may be responsible. Other age-related immunological changes specific to CDI such as poorer antibody production and reduced polymorphonuclear phagocytosis may play a role, as may reduction of gastric acid. One USA study found *C. difficile* to be endemic in long-term care facilities (30% of patients). This has not been confirmed in limited UK studies. The true community incidence of both CDI and asymptomatic carriage is unknown, as are the factors that seem to be responsible for the carrier, as opposed to the infected state.

### Epidemiology: Environmental Contamination

Environmental contamination has a critical role in transmission. Cases cluster in certain rooms, with higher acquisition in shared rooms and with exposure to CD-positive roommates. Environmental cultures may be positive in 40–60% of rooms, including those of asymptomatic carriers. Not only commodes and toilets are contaminated but call bells and, in 40% of rooms, the window sills! Same strain transmission correlates strongly with the intensity of environmental contamination. Up to 60% of health care workers have positive hand cultures within half an hour of patient contact, even if minimal, 95% of strains matching the patient's. Wearing gloves and washing with chlorhexidine eradicates hand carriage.

### Treatment: First Infection

RCTs show that 10 days of metranidazole or vancomycin achieves a 95–100% cure rate, with a relapse rate of 5–15%. Meta-analysis suggests that no one antibiotic (metranidazole, vancomycin, bacitracin, teicoplanin) is more effective, but cost and the risk of contributing to Vancomycin Resistant

Enterococcus (VRE), MRSA or Vancomycin Intermediate resistance Staphylococcus Aureus (VISA) mean that metranidazole is the first-line treatment. Toxic megacolon may require surgery.

### Treatment: Relapse

Relapse requires typing to show that it is not re-infection with a new organism, but responds to repeating the original treatment in >90% of cases. More than one relapse requires a different approach. An RCT suggests that vancomycin treatment plus a one-month course of *Saccharomyces boulardi* (a yeast producing a protease inactivating both toxin and its cell receptor) is effective. Other options are combined rifampicin and vancomycin treatment; pulsed vancomycin; colonising the bowel with non-toxicogenic *C. difficile*, given orally; re-establishing normal bowel flora, given as a rectal enema of fresh faeces from a spouse or partner!

### Prevention: Cephalosporin-restrictive Antibiotic Policies

Two studies from acute elderly units show that introduction of a low-cephalosporin antibiotic policy (Table 1) is associated with a 50% or more reduction in CDI, without increasing crude or pneumonia- or UTI- specific mortality. In one study the policy was enforced by the ward pharmacists. In the other, CDI rates and cephalosporin use were feedback to junior staff regularly. Both studies were pre- and post- intervention studies. Randomised controlled trials (RCTs) are not feasible in individual units. Multiple cross-over designs are hard to countenance after successful reduction of CDI, but this was inadvertently done at one centre when feedback was discontinued after 2 years (Figure 1). Both CDI rates and cephalosporin use rapidly returned to about 80% of pre-antibiotic policy levels. In California, hospital rates of CDI doubled after relaxation of an antibiotic policy that included cephalosporin restriction.

### Thought: Do We Need Cephalosporins?

The 1994 British Thoracic Society guidelines for treatment of pneumonia, which quote no RCT evidence, recommend cephalosporins and

**Table 1.** Cephalosporin-restrictive antibiotic policies in acute elderly units: first-line treatments.

Infection	Antibiotic
Pneumonia	1. B. Penicillin (Str Pn) + Trimethoprim (H Infl)* 2. Amoxicillin or Augmentin**
Urinary tract infection	Trimethoprim #
Gram -ve sepsis	Gentamicin #
Intra-abdominal sepsis	1. Gentamicin* 2. Gentamicin, Ampicillin, Metranidazole*

\*Gloucester

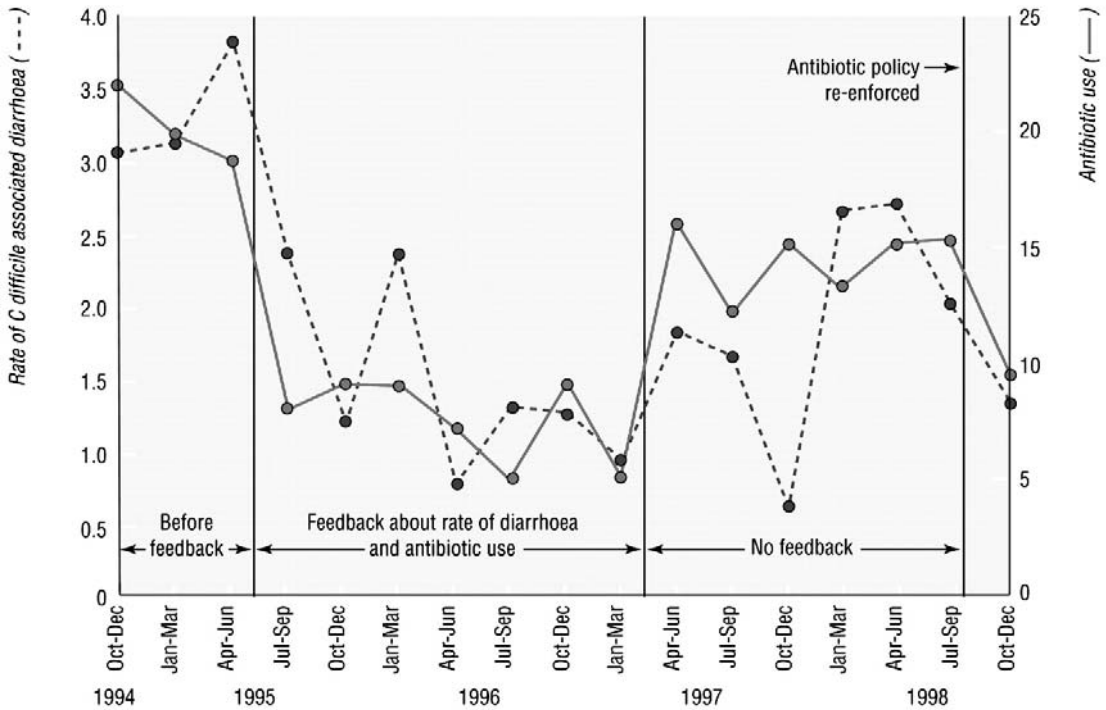
\*\*Royal Free

#Both centres

erythromycin for severe infections, with amoxicillin and flucloxacillin as an alternative to a cephalosporin. However, they have been taken as recommending cephalosporins for first-line treatment in community-acquired pneumonia. A large (500 patients) trial of oral Augmentin versus intravenous cephalosporins in community-acquired pneumonia admitted to hospital showed no difference in cure rate or mortality, but a shorter length of stay in the oral augmentin group! The new BTS guidelines for 2001 may address this, recommending augmentin for severe pneumonia. A recent RCT reports that Piperacillin with Tazobactam (beta-lactamase inhibitor) is as effective as cephalosporins for intra-abdominal sepsis, without the risk of CDI, and a large USA trial found Ampicillin-Sulbactam (beta-lactamase inhibitor) to be better. No RCTs support the use of cephalosporins over common alternatives in pneumonia, infective exacerbations of COAD, UTIs, severe Gram -ve sepsis. Trials are needed to establish the role of cephalosporins as first-line treatment in acute infections, such as aspiration or nosocomial pneumonia.

### Prevention: Isolation, Cleaning, Gloves

Isolating patients, especially those with faecal incontinence, is the cornerstone of preventing further spread. Pre- and post-intervention studies show that this measure, combined with daily cleaning of infected rooms and handwashing with



**Figure 1.** Effect of discontinuing feedback of *Clostridium difficile* associated diarrhoea (CDAD) rates and antibiotic use on CDAD rates and cephalosporin usage in an acute elderly unit.

antiseptic soap, can reduce CDI rates to 20–40% of previous levels, especially if patients are isolated before the diagnosis is confirmed. One of only four RCTs in infection control, carried out in the days before Universal Precautions, showed that wearing gloves when handling body fluids reduced CDI rates by 80%. In all these studies antibiotic use remained unchanged.

### Prevention: Thermometers

Replacement of rectal electronic thermometers by disposables, because of handle contamination by *C. difficile*, reduced the relative risk of CDI to 0.65, in a pre- and post-intervention study in an American hospital where 80% of temperatures were taken rectally! A randomised cross-over study in 20 wards showed that use of disposables was associated with a relative risk of CDI of 0.44. A change from rectal disposable to auditory canal

thermometers was associated with a 60% reduction in relative risk of CDI in another pre- and post-intervention study. Although such a trial would need repeating in the UK, where rectal temperatures are less frequently taken, this finding is of particular interest to physicians for the elderly as auditory canal temperatures are more accurate than oral in acutely ill elderly people.

### Prevention: Immunisation

The animal model for CDI colitis is the Hamster Clindamycin Challenge. When fed 0.5 gm of Clindamycin and given an oro-gastric washout of toxigenic *C. difficile*, 100% of hamsters get diarrhoea and die. Immunisation prevents this. Some have suggested that immunising patients against CDI might be the way forward. Although this might be a future development for selected patients, simple measures such as cephalosporin restriction and strict

hygiene should become part of normal clinical practice first, as these are highly effective.

### **Prevention: Part of Clinical Governance?**

In the USA feedback of infection rates has long been shown to be associated with a reduction of post-surgical infection rates, and is now standard practice. Feedback has also been reported to be effective in reducing MRSA rates, as well as CDI, antibiotic usage (above) and in improving handwashing compliance. In order to reduce HAI and AMR, such feedback could become part of clinical governance, if the small resources required, such as an audit officer to liaise with clinicians, microbiologists and pharmacists and observe handwashing, can be found.

### **MRSA IN THE UK: NATIONAL GUIDELINES**

Earlier UK working party reports recommended an Isolation Unit for both colonised and infected patients, with side-room isolation and cohorting if an IU is not available, and ward closure if this fails to contain spread. These recommendations have given way (1998) to a more flexible targeted approach that depends on the type of ward (patient), isolation facilities available and local experience of MRSA. A range of options are described for minimal risk (e.g. elderly long-stay patients), low risk (medical ward), moderate risk (surgical ward) and high risk (ITU or orthopaedic wards). This change acknowledges the practical difficulties of managing MRSA with a strict isolation policy, and gives local Infection Control Officers more discretion in formulating their approach. It also reflects the view that the outcome of MRSA management is likely to be the result of the interaction between the “Seed” (virulence and epidemicity of the MRSA strain), the “Soil” (patient case-mix or risk group) and the “Climate” (handwashing compliance, antibiotic use, staff-patient ratios, isolation and screening policies).

#### **The Seed: Not All MRSA is the Same**

Virulence and epidemicity may vary with the strain. The virulence of MRSA is probably the same as

MSSA, but it may be greater in some patient groups (e.g. ITU). Delay in effective therapy contributes significantly to mortality. The current epidemic (E-) strain in the UK, E-MRSA 16, causes asymptomatic colonisation in 80% of patients, usually wounds, throat, nose and perineum, with infection in the remainder. Serious infections are relatively rare and directly attributable mortality is less than 2%. However, virulence in some strains is 60%.

Transmission is by direct contact, i.e. HANDS. Staff dressing MRSA-infected wounds have an 80% chance of carrying the organism for up to 3 hours. Immediate washing virtually eradicates carriage. Broad spectrum antibiotics (especially cephalosporins) select out MRSA. Cephalosporin-restrictive antibiotic policies have been reported to reduce MRSA in pre- and post-intervention studies. In Japan, where over 80% of SA are MRSA, vancomycin has long been the first-line antibiotic for SA. Glycopeptide Intermediate resistant SA (GISA) has emerged there and now appeared in the UK. Both cephalosporins and vancomycin have been associated with the global rise in Vancomycin Resistant Enterococci. *In vitro* studies show it is possible to transfer the genes encoding glycopeptide resistance from VRE into ordinary SA, thus raising the spectre of TRSA (totally resistant SA) were this to occur *in vivo*. New antibiotics are now available, but their frequent use is not the answer to MRSA, as this will only postpone the problem until resistance to these appears too.

#### **The Soil (Patient Group)**

In many studies it is severity of underlying disease in the individual patient that determines outcome and it is the protection of the severely ill patient that has determined the thrust of management policies. Although elderly people feature prominently in most outbreaks, the median age being 65 years, the little published data concerns mortality and morbidity of long-stay patients. Detailed, retrospective clinical and microbiological review of the notes of 70 consecutive acute elderly medical patients from the Royal Free's recent MRSA outbreak of EMRSA 16 showed no directly attributable deaths, a colonisation rate of 79% and that nearly all the infections were minor soft tissue infections. There is no published data on elderly

rehabilitation patients, but data from our own rehabilitation unit shows that of 301 consecutive admissions, 54 (18%) were MRSA +ve, of whom only 14 (26%) were treated with Teicoplanin. Directly attributable mortality was zero. None had bacteraemia, catheter or cannula infections. This data confirms most geriatricians' perception that the elderly are at relatively little risk from MRSA. Although the Working Party guidelines define long-stay patients (or RCH and NH residents) as minimal risk, they make no specific mention of acute elderly medical admissions, lumping them in with 'medical patients', who are categorised as still requiring isolation. Their only definitive statement regarding rehabilitation patients is that MRSA should not be a barrier to access to rehabilitation.

To clinicians, the mild clinical problems of MRSA in the elderly pale into insignificance in comparison to the adverse effects of ward closures, and of delays in timely transfer of patients or contacts to rehab wards from acute specialities because of the need to provide a side-room. Isolation adversely affects older patients, especially their rehabilitation, all the more so if hearing, vision or cognition are impaired. The psychological effects of isolation in this group of patients shows significantly greater levels of depression and anxiety compared to controls, with 75% being depressed. The effects on rehabilitation goals are also unstudied, but methodological difficulties of controlling for case-mix, prognosis, length of isolation, and presence of other factors such as dementia are formidable. Data from our unit suggests that mortality in all patients awaiting transfer from acute wards is 33%, compared to 10% of those patients managed on the rehabilitation wards. The mean wait for MRSA patients (25 days) is three times that of others. Such data has helped our microbiologists decide to relax isolation procedures in this sub-group, limit it to uncontrollable secretions (e.g. weeping ulcers, sputum positive pneumonia) and improve handwashing, environmental cleaning and antibiotic use. The effect of this will need evaluation. However, they are reluctant to consider acute geriatric patients in the same light because these patients might well be re-admitted on other occasions to surgical and orthopaedic wards and introduce MRSA into those settings.

### **Climate (Management)**

In many hospitals, especially large tertiary referral hospitals with many patients with severe underlying disease (transplant, oncology, renal etc.), strict isolation policies are applied, with, as a minimum, side-room isolation of all MRSA +ve patients, whether colonised or infected, and screening of selected target groups. However, there may not be the resources to cope with this. The most recent review of the literature concluded that the control measures, especially isolation units, have an impact and that the costs of not controlling MRSA (e.g. extended length of stay, theatre closure, disruption of routine activities, antibiotic budgets) were higher than those of control (IU, eradication therapy, cleaning etc.). However, an earlier American review reported that the intensity of isolation measures were unrelated to the degree of control achieved. A critical review of the literature also showed this, and showed paradoxically that more relaxed policies may succeed where stricter policies may fail and vice versa. Success may coincide with other measures being introduced such as mupirocin, antibiotic policies or intensive ward-based education, feedback of MRSA rates, and handwashing. There are no RCTs, outcome measures vary widely, infection and mortality rates may be unstated, costs may not be reported and what happens once successful control measures are discontinued may not be mentioned. A recent mathematical modelling of the transmissibility of MRSA indicates that what may look like an extremely successful result from a package of control measures may be entirely due to chance. It also shows, however, that even small (10%) increments in handwashing frequency may have major effects on MRSA prevalence. A systematic review is currently being undertaken, both quantitative and descriptive, with mathematical epidemiological modelling to help overcome the difficulty of estimating the clinical and cost-effectiveness of interventions, such as isolation units, where the successful outcome, in effect, is an event (e.g. MRSA colonisation) *not* occurring.

### **In the Meantime: What Can a Poor Geriatrician Do?**

Irrespective of one's own background level of MRSA, strict enforcement of handwashing with, for example,

alcoholic handrub, and routine exercise of a narrow-spectrum antibiotic policy, should be *de rigueur*. It would appear hard to argue for strict policies in rehabilitation settings, but those in favour of relaxing restrictions in acute wards in a hospital with high levels of MRSA should give serious thought to the prospect of TRSA which would inevitably appear should MRSA clinical isolates be so frequent as to necessitate glycopeptide treatment as first line for any SA infection. Maybe it is too late to control MRSA and we should be targeting our efforts outside high risk areas like ITU, on basic hygiene and antibiotic policies, as the Hospital Infection Society suggests, with all hospitals making plans to have Isolation Units available for the next generation of resistant organisms. Countries such as Denmark, with strict isolation policies and high quality basic hygiene, have been able to control MRSA. However, high bed-occupancy and understaffing undermine all infection control, and in the NHS, with both bed and nursing crises, the long-term prospects may not be good. The community prevalence of MRSA is not known, and nursing homes may be reservoirs of MRSA, with widely varying prevalences of up to 27%. The move of patients from the NHS into privately run nursing and residential homes has not been matched by an equivalent transfer of geriatric and IC expertise to help prevent and manage infection, and this is a concern that also applies to infections other than MRSA.

## INFLUENZA AND PNEUMOCOCCAL VACCINATION

### How Effective is Vaccination?

**Pneumococcal Vaccine:** Case control and cohort studies show that PV has a 50–80% efficacy in preventing pneumococcal bacteraemia, not pneumonia *per se*, in those over 65 years of age, or with chronic lung disease, cardiac failure, ischaemic heart disease, or diabetes. The vaccine is cheap (£10) and USA cost–benefit studies show that routine vaccination of the elderly is effective, providing protection for 3–5 years. UK recommendations are that those with chronic cardiac, respiratory, or renal disease, diabetes and hyposplenism should be immunised, as should those with chronic liver disease and immunodeficiency, although there is insufficient data on the last two

categories to know whether it is effective. In the USA the recommendations include all those over 65 years of age. Resistance to following suit in the UK may be influenced by the facts that vaccination only reduces bacteraemia, not pneumonia, and that there are no well-executed community-based randomised controlled trials. However, it has been suggested that there may be no need for such a trial, given the consistently positive results of case control studies. “If clinicians are willing to accept the results of case control studies linking smoking with lung cancer ... they should be willing to accept carefully executed (case control) studies of the effectiveness of Pneumococcal vaccine” (Fedson, 1999).

**Influenza vaccine:** Meta-analysis of 20 cohort studies in 30,000 elderly patients shows that influenza A & B vaccination reduces the risk of pneumonia and hospitalisation each by 50% and death by 70%. Cost–benefit analyses in the UK have shown that immunisation should be offered not only to those with risk factors (chronic respiratory, cardiac or renal disease and diabetes) or living in institutions, but to all people aged 65 years and over. A target of 70% uptake has now been set.

### Uptake of Vaccination

In the UK, only 4% of at-risk patients (by UK criteria) receive Pneumococcal vaccine, although this can rise to 33% during a campaign to promote vaccination in general practices. In the USA, uptake is 45% amongst people aged 65 years or more. USA uptake of Influenza vaccine is 65% for patients aged 65 or more. DoH data suggests that 45% of over-75s with one other risk factor for immunisation are immunised in the UK. Nursing home studies in the USA indicate that outbreaks are more likely if <80% of residents are vaccinated. Uptake in UK institutions is variable—40% in Nottingham nursing homes, 72% in Glamorgan nursing homes—and may therefore be inadequate to prevent outbreaks.

### Treating Influenza

**What about Amantidine?** Amantidine stops Influenza A viral replication, appears effective for nursing home residents not yet affected during an outbreak and is recommended in the USA.



Resistance develops rapidly and may be clinically virulent, and the UK does not therefore recommend Amantidine.

**What about Zanamavir?** This drug inhibits growth of influenza A & B. Randomised controlled trials show a modest reduction in symptom duration (one day) but not in complication rates, hospitalisation or mortality for the higher risk groups (including the elderly) who comprised only 14% of the trial population. It has not therefore been recommended for general use, although the National Institute for Clinical Excellence has now approved it after reviewing drug company data.

### What Next?

The standard 23-valent pneumococcal vaccine covers 90% of serotypes, but is weakly antigenic for some, including nearly all those with AMR. A new 11-valent vaccine, highly efficacious in children, covers only 65% of sero-types in the elderly but provides good cover against resistant organisms and is likely to be used in future. The UK not only needs to consider routine pneumococcal vaccination of all those over 65 years old, but to set up systems for ensuring maximum possible uptake of both influenza and pneumococcal vaccine. Trials of Zanamavir in the high risk group of flu patients are required, but concerns over the development of resistance, which has already appeared, may limit its use. Setting clear goals for vaccine uptake, as the USA have done, may be the way forward, especially in the nursing and residential home settings where care may be fragmented. A provocative thought is whether vaccination policies and their execution should be linked to home registration.

### KEY POINTS

- Staff dressing MRSA-infected wounds have an 80% chance of carrying the organism for up to 3 hours. Immediate washing virtually eradicates carriage. The situation is very similar for CD.
- Handwashing between patient contacts, using an alcohol-based rub, is probably the single simplest effective means of reducing hospital-acquired infection.
- One dose of iv cephalosporin causes 25% of normal volunteers to excrete CD in their stool,

and begins the changeover of MSSA to MRSA in surgical patients receiving prophylactic antibiotics.

- Introduction of a cephalosporin-restrictive antibiotic policy is associated with a 50% or more reduction in CDI in acute elderly wards without increasing crude or pneumonia- or UTI- specific mortality. Similar policies are associated with MRSA reduction.
- Avoid cephalosporins as first-line therapy for pneumonia, urinary tract infections and intra-abdominal sepsis, as there is no RCT evidence to support their superiority over other common alternatives.
- Pneumococcal vaccination reduces pneumococcal bacteraemia by 50–80% in people over 65 years old. Influenza vaccination reduces death by 70%, pneumonia by 50% and hospitalisation by 50% in elderly people.

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#### Overview HAI and AMR

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antibiotic management and infection control. *Clin. Infect. Dis.*, **26**: 1204–14.\*

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## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. A large (500 patients) trial of oral Augmentin versus intravenous cephalosporins in patients admitted to hospital with community-acquired pneumonia showed no difference in cure rate or mortality, but a shorter length of stay in the oral augmentin group.
2. Up to 60% of healthcare workers carry CD on their hands within half an hour of even minimal contact (e.g. returning drug charts). Carriage is virtually eradicated after glove use and washing with antiseptic handrub.
3. Mathematical models of MRSA transmission show that even a 10% increase in handwashing is likely to halve the ward prevalence of MRSA.
4. Same strain transmission of CD correlates strongly with the intensity of environmental contamination, and can be reduced by up to 80% through regular environmental cleaning.
5. MSSA begins to change into MRSA in patients given pre-surgery prophylaxis with cephalosporins on the first day of hospital admission, and change can be complete within 48 hours. Several studies report decreases in MRSA with reduction of cephalosporin usage.



## 38. Nutrition

Anita J. Thomas and Fiona Boyd

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### INTRODUCTION

*“When I am old I will ...  
... eat three pounds of sausages at a go  
Or only bread and pickle for a week”*  
Warning by Jenny Joseph

Nutrition, like geriatric medicine, is a multi-professional discipline. In any consideration of the nutritional state of a patient, you should explore the appropriateness of nutritional intervention or support. In your perusal of the literature, examining the evidence for practice, you will find a knowledge base compiled by dietitians, nurses, clinical scientists, biochemists, geneticists, epidemiologists and doctors. Only by working effectively within a clinical team will you be able adequately to formulate and implement a management plan for the individual patient.

In this chapter we will:

1. Describe UK nutritional surveillance studies relevant to older people
2. Review why old people are particularly at risk of malnutrition
3. Introduce you to methods of nutritional assessment
4. Refer to current national guidelines for older people
5. Highlight some topical subjects in nutrition
6. Summarise methods of nutritional support
7. Provide a general reference list as an introduction to the discipline.

We will not cover the important areas of obesity, parenteral nutrition, diet in the aetiology of disease or deal with factors affecting food selection. Food also has non-nutritional uses that may affect choice. Generational, ethnic and cultural differences can affect intake.

### NUTRITIONAL ASSESSMENT

#### Nutritional Surveillance in the UK

The National Food Survey undertaken by the Ministry of Agriculture, Fisheries and Food (MAFF) annually samples 6000 households with a 7-day record of food expenditure and consumption broken down by region, income group and type of household. This shows trends in intake and consumption, not information about individuals.

National Diet and Nutrition Surveys (NDNS) commissioned by MAFF and the Department of Health (DH) undertake large detailed dietary studies of individuals. Groups of up to 2000 are studied and information obtained on quantitative intake, anthropometric and biochemical measures of nutritional status, socio-economic and demographic characteristics. The NDNS of people aged 65 years and over (1998) reported findings in 1275 people living at home and 412 living in residential and nursing homes, and included an oral health examination. Mean nutrient intakes were generally satisfactory.

Vitamin D intakes were low and a third of institutionalised subjects studied had biochemical evidence of vitamin D deficiency with a quarter also showing indices for folic acid, riboflavin, ascorbic acid and iron in the range associated with deficiency.

NDNS, 1998

Previous studies in the UK by the Committee on Medical Aspects of Food (COMA) had suggested a 7% incidence of malnutrition in well older people living in their own homes, the figure doubling for those aged 80 years and over.

## Older People At Risk

*“Boiled myself an egg on the ring and had it with a slice of Ryvita...*

*Eat less now. A buttered scone goes a long way”*

*‘Soldiering On’ from ‘Talking Heads’ by Alan Bennett*

Even in the absence of disease, older people are at risk of malnutrition because:

1. Older people are more likely to live alone, in an institution or be housebound
2. Income and expenditure decline
3. Average intake of energy falls with advancing age
4. Quality of intake is then more important, yet often suboptimal
5. Access to shops may be difficult
6. Ingesting food may be harder with ill-fitting dentures and age-related oesophageal motility changes
7. Age-related physiological changes may mean inefficient gut function, and nutrient metabolism and utilisation;
8. Previous experiences may influence nutritional status e.g. foetal and childhood nutrition, GI surgery
9. Many of the diseases of later life themselves predispose to malnutrition, such as dementia, Parkinson’s disease and stroke.

*“‘Have the men had enough?’*

*Never mind the men.*

*Which men?*

*Hurry up, the potatoes will be cold.*

*I’d love a potato.*

*Then take one, Grandma.*

*Have the men had enough?’”*

Margaret Forster  
*‘Have the men had enough?’*

The added insult of disease often unmasks subclinical malnutrition, resulting in impaired immunity, repair and recovery. The following may significantly increase or change nutritional requirements:

1. Trauma
2. Infection
3. Hypercatabolic states, e.g. fever
4. Drug therapy, e.g. anticonvulsants

In 1992, retired couples who were mainly dependent on the state pension spent about £15 per week on food.

Central Statistical Office  
Expenditure survey on family spending 1992, as quoted by Webb and Copeman, 1996.<sup>1</sup>

## Methods of Nutritional Assessment

Nutritional deficiency can be conceptualised as beginning with

1. A predisposition to the development of deficiency, e.g. dietary inadequacy revealed by diet assessment;
2. Followed by subclinical deficiency, revealed by biochemical or anthropometric tests;
3. Culminating in clinical disease.

## Adequate for What?

Assessing whether dietary intake is adequate requires an answer to the question “Adequate for what?” Estimates of nutrient requirements have used different methodology and outcome measures for different nutrients varying from prevention or cure of deficiency states, through biochemical or enzymatic indices of status or function to metabolic balance studies. There may be international differences in approach, for example the UK estimate of vitamin C requirement is based around some experiments in 1952 where volunteers deprived themselves of vitamin C in varying amounts. Clinical signs of scurvy were the outcome measure. In the USA isotopic studies were the basis

for the recommendation of a different requirement. In some cases much information is available regarding an individual nutrient, in others, little if any. In the older age group less information is available, and extrapolation from younger groups may not be valid.

The same observations apply to anthropometric measures. The standard against which measurements of skinfold thickness and mean arm circumference as measures of total body fat and protein were calibrated, employed a latter-day version of the ducking stool to immerse subjects in water. Body weight in air and in water with volume of displacement and known density of fat allowed the calculation of mass. Unsurprisingly, there were few elderly volunteers.

The rationale for using a particular method for an individual nutrient can be challenged by new methodology, which may also give an insight into new physiological concepts. A good example here would be the use of labelled amino acids to study protein metabolism, in addition to the 'black box' approach of the conventional nitrogen balance study.

The objective of nutritional assessment should define the choice of method. Three main aims are to:

1. Characterise the type and severity of malnutrition
2. Identify those at risk
3. Monitor response to nutritional support.

Gariballa and Sinclair (1998)<sup>2</sup> give an authoritative and full account of the subject in an excellent summary of nutrition, ageing and ill health.

### Dietary Assessment

1. Qualitative, e.g. diet history, food frequency questionnaire
2. Quantitative, e.g. dietary recall, written or weighed food record
3. Duplicate meals and metabolic balance

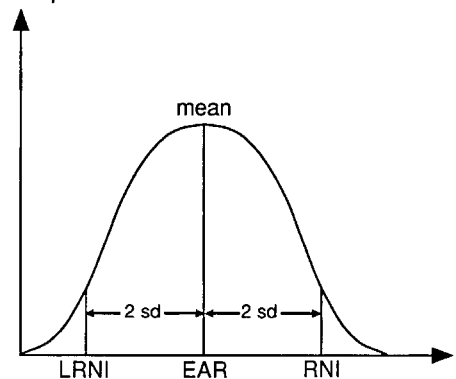
Try some of these out on yourself to explore the limitations of the methods. Can you remember what you ate for breakfast three days ago? If asked to weigh and record the constituents of

everything you ate for a week you might well decide not to indulge in that seafood risotto, but choose something simpler that you would normally not eat. How would you feel about cooperating with a metabolic balance study where an exact duplicate of everything you ate and drank was prepared and then analysed together with your left-overs, the subtraction giving an accurate picture of your intake? Worse to come, the output side of the metabolic balance requires collection of all urine, faeces and in some cases sweat and seminal fluid. If this were conducted in a laboratory, it might be technically easier but studying a subject in their own home would be preferable. Would you volunteer?

Dietary Reference Values (DRVs) are formulated by COMA to assist in the assessment of diet in groups of people. Figure 1 shows the derivation of the Estimated Average Requirement (EAR—the notional mean requirement), the Lower Reference Nutrient Intake (LRNI—mean minus two standard deviations) and the Reference Nutrient intake (RNI—mean plus two standard deviations). Intakes at or above the RNI 'will almost certainly be adequate' whilst intakes at or below the LRNI will 'almost certainly be inadequate for most individuals'.

The COMA publication 'Dietary Reference Values for Food Energy and Nutrients for the United

Frequency distribution of individual requirements



sd = standard deviation  
 EAR = Estimated Average Requirement  
 LRNI = Lower Reference Nutrient Intake  
 RNI = Reference Nutrient Intake

Figure 1. Dietary Reference Values.

Kingdom' summarises current recommendations with a useful background summary and comprehensive reference list for each nutrient.<sup>3</sup> A later publication, 'The Nutrition of Elderly People', deals specifically with recommendations for the older population.<sup>4</sup>

### Biochemical Tests

These may be tests of status, such as the blood level or tissue level of a nutrient, e.g. serum iron, or of function, such as activity of a dependent enzyme, e.g. red cell transketolase. Some measures are themselves affected by disease and other non-nutritional factors. Serum albumin is a good example, being affected by changes in the balance between synthesis and degradation in liver disease and hypothyroidism, by increases in plasma volume in heart failure, and by intra/extravascular shifts; in stress and trauma the shift results in a fall in serum albumin whilst in semi-starvation serum albumin levels may be artificially elevated by a shift from the extravascular to intravascular compartment. Serum albumin has a relatively long half-life of 14–20 days and is not sensitive to short-term changes in protein status. Serum proteins with a short half-life, such as thyroxine-binding prealbumin, may be more useful when age and gender-specific reference ranges are available. Informed selection of biochemical tests of status and function is critical.

### Anthropometry

The translation of measurement of body weight into a useful estimate of body fatness has resulted in the formulation of a series of anthropometric indices. Body mass index (BMI—weight in kg divided by height in m<sup>2</sup>) is the most familiar. Substitution of demispan for height and the adoption of particular formulae for an older population may improve the relevance of these measures, and standards from a UK study of healthy older people are available. Demispan is the distance measured from the sternal notch to the finger web with the arm outstretched.<sup>4</sup>

Researchers some 35 years ago first used hydrodensitometry (underwater weighing), with an assumed lean body mass density of 1.10, and correction for lung volume, to calculate body volume and percentage fat. These measures correlated in a

younger population with skinfold thickness measurements. Measuring the circumference of the arm and applying maths allowed calculation of fat-free mass. Body composition changes with age, there being less fat-free mass and less subcutaneous fat than in the young. Many of the assumptions around anthropometric measurements may not apply to the older population, though there are some published reference data for the body mass indices specifically adapted for use in an older population.

More recently developed methods, such as MRI and electric conductivity, are research tools at present.

### Clinical History and Examination

The cachexia of protein calorie malnutrition is sometimes overlooked in an older person, and the pathognomonic features of specific nutrient deficiencies are rarely seen. The proximal myopathy of osteomalacia and the sheet haemorrhages of scurvy are notable when seen, but not common.

The 'Subjective Global Assessment' is a method for extracting information (such as weight loss over the preceding 6 months, gastrointestinal symptoms, dietary changes, and examination findings) from the conventional history and examination. These factors are ranked for severity and considered in clinical context. The 'Mini Nutritional Assessment' (MNA) combines anthropometric, dietetic and subjective global parameters. Assessment tools comprising composites of indices of nutrition are useful in screening but limited in specificity and sensitivity by the effect of non-nutritional factors.

A challenge for the future is to validate non-invasive measures of nutritional assessment for the older person in clinical practice, whether unidimensional (such as measures of body composition) or multidimensional (such as nutritional assessment scores).

### NUTRITIONAL SUPPORT

*Thousands are annually starved in the midst of plenty for want of attention to the ways which alone make it possible for them to take food.*

Florence Nightingale

## Supplementing the Normal Diet

In the wider sense, supporting the access to food (whether assistance with shopping, financial help or assistance with the physical act of getting food to the mouth) are all of obvious importance.

Oral disease and dysphagia are common in the older population, particularly in association with stroke, dementia and Parkinson's disease. A proper assessment of swallowing, made by a speech and language therapist, with videofluoroscopy where possible, is often a neglected part of the assessment of disability and a lost opportunity to improve personal wellbeing and clinical outcome.

Modification of volume, consistency and content of oral diet by a dietician can improve intake sufficiently. The use of commercially prepared, nutrient-dense supplements does not appear to reduce overall voluntary intake. Four cartons of milk-type supplements provide about half the daily energy and three-quarters of the daily protein requirement of a bed-bound patient, but patients usually tolerate less than this. Other types of supplement include fortified juice-type supplements, fortified puddings and modular supplements (containing one or two macronutrients). Further details of types of enteral supplement can be found in the *Prescriber's Journal* article on Malnutrition in Elderly People.<sup>5</sup>

## Enteral Feeding

If the above measures fail or are contraindicated, enteral support may be necessary. A fine bore nasogastric tube to provide overnight feeding may be adequate but a PEG (percutaneous endoscopic gastrostomy) (see chapter on PEG feeding by Terry) may be needed for more prolonged support. Time spent explaining the process involved in the placement and the use of the PEG with the patient and carers is of vital importance. Defecation may occur only once a week due to the lack of dietary fibre and patients need reassurance that constipation is not developing.

Most commercial general purpose feeds are made up from a variety of protein sources which include casein, soya, and mixtures of amino acids with glucose polymers and triglycerides added to increase energy content. Typically such a feed would provide approximately 1 kcal/ml and have an osmolality of 280–420 mmol/kg.

Elemental feeds contain hydrolysed proteins/ amino acids as a protein source with little added fat. As a result they are easily absorbed, but their osmolality is high and they are rarely used today. Special feeds can be formulated for patients with hepatic or renal disease. Appropriate positioning of the tube should be confirmed radiologically before feeding is commenced. Hygienic precautions in the preparation, storage and administration of the feed should reduce bacterial contamination, though it is important to allow the feed to reach room temperature before administration. Floating islands of ice-cold feed do not encourage tolerance!

Bolus feeding is associated with diarrhoea, distension and nausea and delivering the feed at a defined rate using a pump delivery system overnight is better, also allowing the patient mobility during the day. Cyclical feeds with 'feed-free' periods reduce the risk of bacterial colonisation by allowing a fall in gastric pH, reduction of sodium and water retention, and reduction of fat accretion caused by continuous stimulation of insulin release.

### Some clinical situations in which to consider enteral feeding\*

Evidence of protein energy malnutrition or cachexia

Inability to eat or swallow

Hypercatabolic states, e.g. sepsis, fever, burns

Anorexia, e.g. prolonged illness (> 5 days), chronic or malignant disease

Neurological disease with dysphagia or loss of gag reflex

Pre or post major surgery

\*Gut function is preserved; extensive gastrointestinal disease may mean that the patient requires parenteral feeding

We will not deal with the ethical issues surrounding the decision to commence or withhold nutritional support, but these are weighty matters that demand your attention and authoritative accounts in the major texts and journals are readily accessible (e.g. Lennard Jones, 1999<sup>6</sup>). The optimal time to start PEG feeding in the stroke patient is certainly within one week to ten days, few would delay for two weeks. Research continues in this area (International Stroke Trialists Collaboration)



and the decision must take account of individual factors. In some circumstances nutritional support will not alter the eventual outcome or patient comfort and is then futile. In other cases, early support will hasten recovery and reduce eventual disability. There are significant problems associated with the procedure (see Terry's chapter) though recent studies indicate that PEG is well tolerated in post-stroke patients, and that quite late recovery of swallowing can occur (even after 6 months).

Nutritional supplementation improves outcome (morbidity and mortality) after fractured femur but also in groups of patients with a variety of clinical conditions. A recent meta-analysis reviews protein and energy supplementation in adults of all ages.<sup>7</sup>

#### Some complications of tube feeding

**Aspiration pneumonia**—check tube position on X-ray, sit the patient up to 30 degrees during feed, and observe for problems

#### Wound infection

**Tube problems**—blockage (use a dispersible feed and flush the tube), leakage, breakage, dislodgement

#### Pneumoperitoneum

**Metabolic problems**—hyperglycaemia, low K, low P, low Zn, low RBC folate, low prothrombin, essential fatty acid deficiency

**Hyperosmolar syndrome**—due to excess Na absorption, may also cause volume overload

**Oesophagitis** is rare but can be caused by tube trauma or reflux

**Diarrhoea and Intestinal Discomfort**—multifactorial; iso-osmolar feed given too fast or hyperosmolar solution sometimes with excess lactose. Review the feed formula and administration, check for bacterial contamination of infusion, review medication, especially antibiotics.

#### ENDPIECE

Here are some currently newsworthy subjects in the popular and the scientific press to whet your appetite! Space does not allow a discussion here but all the subjects mentioned below have been headline news in the major journals over the past 5 years.

1. Antioxidants—the link between epidemiological studies, dietary manipulation and the incidence of cancer and vascular disease
2. Effect of early nutrition on adult disease (the Barker hypothesis)—how could programming in early life affect the incidence of disease in middle and late life?
3. Functional foods—for example, the physiological effects of plant sterols and phyto oestrogens
4. Food supplements and fortification—the public health benefits, risk assessment and the consumer's choice

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#### SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. Serum albumin:
  - a) Is a good measure of short-term protein status
  - b) Is affected by changes in atmospheric humidity
  - c) Is increased in patients suffering major trauma by shifts of albumin from the ex-

- 
- travascular to intravascular compartment
- d) Is increased in patients suffering from semi-starvation by shifts of albumin from the extravascular to the intravascular compartment
  - e) Has a half-life of 7—10 days
2. The following are recognised complications of enteral feeding by PEG or fine bore NG tube:
- a) Diarrhoea
  - b) Secondary lactase deficiency
  - c) Hypercatabolic state
  - d) Hirsutism
  - e) Hypokalaemia



## 39. Percutaneous endoscopic gastrostomy (PEG) feeding

Helen Terry

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*“It’s good food that keeps me alive and not fine words”*

Moliere, 1672 (from *Les Femmes Savantes*)

The formation of a gastrostomy using a percutaneous endoscopic technique was first described in 1980.<sup>1</sup> Until then, formation of a gastrostomy required laparotomy and usually general anaesthesia, but many patients in need of enteral feeding were too ill to undergo this procedure. In most cases, feeding via a nasogastric tube was attempted. Percutaneous endoscopic gastrostomy (PEG) provided an alternative to surgical gastrostomy which was simple, could be carried out under local anaesthesia, and was well tolerated even by sick elderly patients.<sup>2</sup> It quickly gained in popularity and is now the main method of providing long-term enteral nutrition.

### WHO SHOULD BE CONSIDERED FOR PEG FEEDING?

If the gut works, use it! Where possible, enteral nutrition is preferable to parenteral nutrition as it helps to maintain the integrity of the local defence barrier of the intestinal wall and prevents colonisation and systemic invasion by gut bacteria. Enteral feeding is also cheaper and easier to monitor. All patients who have a functional gastrointestinal tract, but are not able to take food safely by mouth, should be considered for PEG feeding. Those who can swallow safely, but are unable to eat enough, may also benefit from PEG feeding to supplement their nutritional intake.

Some clinicians use nasogastric tube feeding for several weeks before arranging a PEG, although the trend is towards a short period of nasogastric feeding or proceeding directly to PEG insertion. This has come about partly as experience with PEG

has increased and it has been shown to be a relatively simple and safe procedure. PEG feeding delivers a greater percentage of prescribed nutrition (mainly because of the frequency with which nasogastric tubes fall out), is more acceptable to patients than nasogastric tube feeding, and interferes less with rehabilitation.<sup>3,4</sup> PEG feeding may be undertaken as a short-term measure in those who are expected to recover the ability to eat, or it may be palliative in those with incurable disease. These groups include those with:

- Neurological dysphagi
  - stroke
  - motor neurone disease
  - Parkinson’s disease
  - multiple sclerosis
- Obstructing neoplasms
  - larynx, oesophagus, bronchus
- Severe facial trauma
- Severe catabolic conditions
  - post-surgery
  - sepsis
  - pancreatitis
  - severe burns

### CONTRAINDICATIONS TO PEG FEEDING

Some contraindications to PEG insertion are listed in Table 1. Most clinicians consider that PEG is contraindicated if a patient has a very limited lifespan or is likely to have a very poor quality of life. (See section on ethical considerations.) PEG has been performed safely in patients within 30 days of a myocardial infarction. When PEG is contraindicated for technical reasons, it may be possible to insert a gastrostomy tube by a radiological or operative method, or to consider feeding via a jejunostomy.

**Table 1.** Contraindications to PEG tube insertion

Absolute contraindications to PEG insertion	Relative contraindications to PEG insertion
<ul style="list-style-type: none"> <li>• Patient unfit for endoscopy, e.g. severe pneumonia with respiratory failure</li> <li>• Inability to pass the scope through the oesophagus</li> <li>• Gastric outlet obstruction</li> <li>• Total gastrectomy</li> <li>• Uncorrected bleeding disorders</li> </ul>	<ul style="list-style-type: none"> <li>• Massive ascites</li> <li>• Hepatomegaly or splenomegaly</li> <li>• Portal hypertension with oesophageal or gastric varices</li> <li>• Severe obesity</li> <li>• Large hiatus hernia</li> <li>• Active peptic ulcer</li> <li>• Neoplastic or infiltrative diseases of stomach</li> <li>• Partial gastrectomy</li> </ul>

## TEAM APPROACH

Well-coordinated interdisciplinary teamwork improves the care, and reduces the complication rates and cost in patients receiving enteral nutrition. Speech and language therapists, dieticians, specialist nutrition nurses, ward nurses, doctors and pharmacists are all involved. Many hospitals now have a nutrition team responsible for enteral feeding. Team members may be directly involved with patient care, but also have a role in educating and supporting ward-based staff. A patient being considered for PEG feeding should have a nutritional assessment and a swallowing assessment. The points for and against PEG feeding, the procedure itself, the practicalities of tube feeding and potential complications should be discussed with the patient and carer in advance.

Once feeding has started, the team must monitor the patient and then, if appropriate, prepare the patient and carer for the transition to PEG feeding at home. This will include education about the use of the PEG, and advice on how to deal with any complications that arise. Some teams arrange home visits and have a telephone ‘hot-line’ for emergency advice. The nutrition team also has a role in following up PEG-fed patients. Once patients are on a stable regimen, their clinical condition, nutritional status and ability to swallow should be assessed every three to six months.

## MOUTH CARE

Do not forget about the mouth! In patients who are taking nothing by mouth, good mouth care is

essential for their comfort and oral hygiene. It may also reduce contamination of the PEG tube when it is pulled through the mouth during insertion, and decrease the incidence of stomal infections. Optimum mouth care includes twice daily brushing of the patient’s teeth (or dentures), gums and tongue (if it is coated). Patients should rinse their mouth with water or a dilute mouth rinse as often as is necessary to keep the mouth moist and clean. The carer may clean the patient’s mouth with a gauze sponge dipped in a dilute mouth rinse (this may need to be done as often as every two hours).

## PERCUTANEOUS ENDOSCOPIC GASTROSTOMY—THE PROCEDURE

There are several endoscopic techniques for inserting a gastrostomy tube (Table 2). The ‘pull’ method is most widely used. It is usually performed by two operators, takes about twenty minutes, and is successful in 98% of cases. The patient is sedated and a dose of a broad spectrum antibiotic (e.g. cefotaxime) is often given to cover the procedure. Some randomised controlled trials have suggested that this reduces subsequent infection around the tube, but others have not supported this finding. The endoscopist insufflates the stomach so that the anterior wall of the stomach meets the anterior abdominal wall. The best site for insertion of the gastrostomy tube is identified by transillumination from within and external indentation with a finger. The assistant infiltrates local anaesthetic into the abdominal wall and passes a cannula through the skin into the stomach. He or she passes a thread through the cannula into the gastric lumen. The

**Table 2.** Procedures for inserting a gastrostomy tube

Endoscopic gastrostomy procedures	Non-endoscopic gastrostomy procedures
<ul style="list-style-type: none"> <li>• Pull method</li> <li>• Push method</li> <li>• Introducer method</li> </ul>	<ul style="list-style-type: none"> <li>• Percutaneous radiological gastrostomy</li> <li>• Laproscopic gastrostomy</li> <li>• Open surgical gastrostomy</li> </ul>

endoscopist grasps this with biopsy forceps and pulls the endoscope along with the thread out through the mouth. He attaches the PEG tube to the thread and the assistant pulls it through the mouth, down into the stomach and out through the abdominal wall. An inner bumper or balloon retains the tube in the gastric lumen. The assistant applies gentle traction on the tube and then secures it with an external fixation device. It is important that there is not excess tension between the internal bumper and the external fixation device because of the risk of necrosis of the gastric mucosa and skin.

In some hospitals, most gastrostomy tubes are put in by radiologists using a non-endoscopic technique. The choice of insertion method will usually depend on local expertise. However, the endoscopic method has the advantage of allowing diagnosis of concurrent upper gastrointestinal disease, which is present in up to 20% of patients. The radiological procedure may sometimes be attempted in patients in whom it is not possible to pass an endoscope. If neither endoscopic nor radiological placement of a gastrostomy tube is possible, a surgical approach may be considered. The use of laproscopic gastrostomy is becoming popular as an alternative to open gastrostomy. The technical aspects of the different procedures for gastrostomy placement, and evidence on their relative merits, are well reviewed by Safadi and others.<sup>5</sup>

A PEG tube may need to be removed when it is no longer needed for feeding, or if it deteriorates and needs replacement. The procedure will depend on the type of tube. Some require endoscopic removal; some can be cut off at skin level, allowing the inner crossbar to pass in the stool; and some of the newer tubes have a deflatable head that can be pulled out through the stoma.

## STARTING FEEDING

Procedures for starting PEG feeding evolved from experience with surgical gastrostomy. It has been

customary not to use the tube for 24 hours and to give only water initially. Feed is then introduced and the strength and rate are increased gradually. Several recent randomised controlled trials have shown that early tube feeding (as soon as three hours after the procedure) is safe, and that full strength feed can be used from the start, and the rate built up steadily.

There are different patterns of feeding:

- Continuous infusion via a pump with a four-hour break each 24 hours
- Bolus feeding using a syringe to deliver 250–400 ml of feed several times a day
- Intermittent gravity feeding, where a bag of 250–500 ml feed runs in over 30–60 minutes;
- Cyclical feeding using a pump.

Continuous feeding is used while feeding is being established, and then patients are often switched to bolus or intermittent feeding for their convenience. Cyclical feeding may be useful in patients in whom PEG feeding is supplementing oral nutrition or who are being weaned off PEG feeding. They can be fed by infusion overnight and take food by mouth in the day.

The usual volume of feed is 1500–2000 ml over 24 hours. 30–50 ml flushes of tap water are used before and after bolus feeding, and every 4 hours in continuous feeding. The dietician will advise on the type of feed which is appropriate for each patient's nutritional, metabolic and fluid requirements. Extra water may be needed. There are different feeds for use in renal, hepatic and cardiac disease. Further details on the content of enteral formulas and delivery of feed may be found in the article by Drickamer.<sup>6</sup> Table 3 gives a guide to the type of monitoring of patients that is required after PEG insertion and while starting feeding. The enteral feed may affect the absorption and metabolism of certain drugs (e.g. warfarin, digoxin, theophylline, carbamezapine). The pharmacist will be able to

**Table 3.** Aspects of monitoring of patients on PEG feeding

Parameter	Frequency
• Temperature, pulse and respirations	• Daily
• Fluid balance	• Daily
• Stool chart	• Daily
• Weight	• 2 × weekly
• Urea, electrolytes, phosphate	• Daily. Once stable 2 × weekly
• Glucose	• Regular BMs or daily blood glucose
• Liver function tests and albumin	• 2 × weekly
• Trace elements	• Weekly with long-term feeds or severely catabolic patients

advise on dose modification and monitoring of levels.

### COMPLICATIONS ASSOCIATED WITH PEG

The procedure itself has a mortality rate of less than 1%—mostly related to aspiration pneumonia or peritonitis. Some of the complications that have been reported after PEG are shown in Table 4. Major complications occur in only about 3% of patients. Minor complications are more common, but usually easily resolved. Retrospective studies have shown a high 30-day mortality rate, but most of these deaths are related to the underlying poor clinical condition of the patients, rather than to complications arising from the procedure.

#### Early Leakage Around the Tube

This has been reported to be a possible early sign of gastric necrosis. Attempts to adjust the tube on the

ward have in some cases led to fatal peritonitis.<sup>7</sup> The feed should be stopped and a gastroenterological opinion sought. The position of the PEG may need to be checked by endoscopy.

#### Aspiration and Pneumonia

Feeding via a PEG, rather than a nasogastric tube, does not eliminate the risk of aspiration and pneumonia.<sup>8</sup> There is wide variation in reported prevalence rates of aspiration in PEG-fed patients (figures range from 3% to 90%). This reflects the underlying differences in populations studied, and the lack of an agreed definition of aspiration. Some studies have used a clinical definition while others have used videofluoroscopy. Some include aspiration of oropharyngeal secretions as well as of feed. Risk factors for aspiration pneumonia include swallowing difficulties, previous aspiration, previous pneumonia and reflux oesophagitis. Measures that may help to reduce the chance of aspiration during PEG feeding include:

**Table 4.** Complications associated with PEG

Major	Minor
• Aspiration with severe pneumonia	• Wound infection
• Perforation of oesophagus	• Stomal leakage and skin irritation
• Peritonitis due to	• Haematoma at gastrostomy site
– early tube removal	• Transient ileus
– unrecognised migration of catheter into the abdominal wall	• Transient pneumoperitoneum
– necrotising fasciitis	• Diarrhoea or constipation
• Upper gastrointestinal haemorrhage	• Nausea and vomiting
• Gastrocolic fistula	• Tube blockage
• Internal migration of catheter and intestinal obstruction	• Late tube removal

- Ensuring that the patient is propped up at 30 to 45 degrees during feeding and for 30–60 minutes afterwards
- Checking that the position of the tube is correct
- Checking gastric residual volumes regularly and slowing the feed if they are high (in bolus feeding, the residual should be less than 100 ml before the next feed and in continuous feeding less than twice the hourly rate)
- Changing from bolus feeding to continuous feeding
- Trying an agent to promote gastric motility (e.g. metoclopramide or cisapride)
- Converting to a jejunostomy feeding tube.

A feeding tube may be placed in the jejunum surgically, radiologically via the stomach or by using a percutaneous endoscopic technique. A PEG-J tube can be inserted via a gastrostomy tube, which allows simultaneous jejunal feeding and gastric drainage, with the aim of avoiding aspiration of feed. Researchers have tried to determine whether this does reduce aspiration and pneumonia in comparison to PEG feeding, but results have been contradictory. The studies were mostly small, retrospective, used different methods and looked at very different populations. Further work is needed to clarify this issue.

### Diarrhoea

Diarrhoea often occurs in PEG-fed patients. The formula feed is frequently blamed, but there are other more common causes to exclude:

- Medications (e.g. antibiotics, sorbitol-based elixirs, magnesium-containing preparations)
- Infective causes (including *Clostridium difficile*)
- Constipation with overflow
- Too rapid delivery of feed
- Feed too cold
- Feed contamination
- Feed composition (osmolality, presence of lactose, fibre content).

Once an infective cause has been excluded, loperamide or codeine may help to control symptoms. A dietician will advise on changes in the type of feed which might help.

### TIPS FOR UNBLOCKING A BLOCKED PEG

A PEG tube may become blocked with feed residue or precipitated medications, particularly if it is not flushed with water before and after each use. Gently alternating aspiration and flushing with warm water for a few minutes may unblock it—use a 50 ml syringe, as a smaller one may cause the tube to collapse. If this does not work the following may be tried:

1. Gently flushing with 30 ml of warm water and leaving for 30 minutes.
2. Flushing with 30 ml of soda water or cola and leaving for a further 30 minutes.
3. Try instilling 30 ml of pineapple juice. This contains an enzyme which may dissolve the material blocking the tube.
4. Breaking open one or two pancreatic enzyme capsules and dissolving the contents in 30 ml of water. Flush this down the tube and leave for 30 minutes.
5. If the above fail, contact a gastroenterologist who may be able to unblock the tube with endoscopic brushes or guide wires. Do not be tempted to poke wires down the tube yourself.

If these measures are unsuccessful, the tube will have to be replaced.

### WHAT TO DO IF A PEG TUBE FALLS OUT

If a PEG tube falls out soon after insertion, a mature tract will not have formed and there is a risk of leakage of gastric contents leading to peritonitis. (The tract is usually established within a week, but this may be delayed for up to three weeks in patients who are malnourished or on steroids.) Start intravenous antibiotics (e.g. cefotaxime and metronidazole), and a proton pump inhibitor to reduce the acidity of the leaking gastric fluid. Watch closely for signs of peritonitis and be prepared to seek a surgical opinion. Contact a gastroenterologist promptly—he or she may be able to use a guide-wire technique safely to re-establish the tract if this is done quickly enough. Otherwise, the gastrostomy tube will need to be replaced under endoscopic guidance—usually after a delay of one to two weeks.



If a PEG tube comes out once a fistula is established, it is important to put in a replacement tube within a few hours to keep the stoma open. A 16 or 20 French Gauge Foley urinary catheter may be used as a temporary measure. It should be carefully inserted into the stoma, the balloon inflated, gentle traction applied, and the catheter taped securely to the abdominal wall. A gastroenterologist will then be able to insert a replacement PEG tube or button gastrostomy without the patient having to go through the full endoscopic procedure again.

A confused patient is at particular risk of pulling out his PEG tube. Ensure that the tube is well secured and hidden by a dressing or bandage. Consider converting to a button gastrostomy once a mature tract is formed. This is less bulky, so attracting less attention from the patient, and is not as easy to pull out.

### **PEG FEEDING AFTER A STROKE**

Swallowing problems in acute stroke are common, occurring in up to 45% of patients within the first 48 hours. About a third of these have resolved by the end of the first week, and swallowing difficulties persist in only 2% of survivors at one month. It is often unclear in the first few days which patients are going to regain a safe swallow quickly.<sup>9</sup> This may encourage the doctor to wait a while before starting enteral feeding. However, many elderly patients with a stroke are already malnourished on admission to hospital, and if they are unable to take adequate food their nutritional status will quickly decline. This may lead to reduced muscle strength and lowered resistance to infection, and result in a poorer outcome. So why not avoid this by early enteral feeding in all those with an inadequate oral intake?

Stroke patients with dysphagia are in a poor prognostic group in terms of survival and functional recovery. Studies of long-term follow-up of stroke patients with PEG have reported a high in-hospital mortality and a high level of disability in those that do leave hospital.<sup>10,11</sup> This has raised concern that if feeding is started early in patients whose prognosis is uncertain, this may only prolong suffering for many—or increase their chances of being kept alive with severe disability and a poor quality of life. Some clinicians feed patients via a nasogastric tube for a time while they

wait to see if swallowing recovers and to give more time to assess the likely prognosis. However, nasogastric tubes tend to fall out and need to be replaced frequently, which is miserable for the patient and often results in inadequate delivery of nutrition. The nasogastric tube may also get in the patient's way during rehabilitation.

The variation in practice described reflects the lack of evidence from prospective randomised controlled trials on feeding after stroke. This is being addressed by the International Stroke Trials Collaboration in their FOOD Study (Feed Or Ordinary Diet). In this cluster of international multicentre prospective randomised controlled trials, the organisers are investigating whether early initiation of tube feeding increases the proportion of stroke patients surviving without severe disability, and if feeding via a PEG rather than a nasogastric tube affects the outcome. They hope to establish whether any feeding policy decreases the case fatality rate, only at the expense of increasing the proportion of patients surviving with severe disability. They are also trying to identify subgroups, such as elderly patients or those previously malnourished, who will particularly benefit from supplementary feeding. Their results may give evidence on which to base clinical practice.

### **ETHICAL CONSIDERATIONS**

Difficult decisions about PEG feeding usually arise when there is uncertainty about prognosis and whether PEG feeding is in patients' best interests. Patients may not be capable of making an informed choice about their care. In these cases, the team needs to consider the circumstances of each individual, and take into account the views of carers and any previously expressed wishes of the patient, before deciding to start PEG feeding. It is often helpful to involve the general practitioner, who may know the patient well. It is important to be realistic about prognosis, but if in doubt it is better to feed the patient while further assessment and treatment of the underlying condition occur. The ethical and legal aspects of giving or withholding fluid and nutrients have been reviewed by Lennard-Jones<sup>12</sup> and the British Medical Association has recently given guidance on this difficult area.<sup>13</sup>

## KEY POINTS

- Consider PEG feeding in all patients with a functional gastrointestinal tract who are not able to take sufficient food by mouth and who have a reasonable life-expectancy.
- PEG insertion has a less than 1% procedure-related mortality and a low rate of major complications.
- The high 30-day mortality rates reported after PEG insertion mainly reflect the underlying poor clinical condition of the patients who require PEG feeding.
- Successful PEG feeding requires an interdisciplinary approach involving doctors, nurse, dietitians, speech therapists, pharmacists and carers.

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## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. A PEG tube may be:
  - a) helpful in a patient with oesophageal obstruction;
  - b) unblocked using the dissolved contents of a pancreatic enzyme capsule;
  - c) temporarily replaced with a urinary catheter if it falls out the day after insertion;
  - d) used to deliver three bolus feeds of 800 ml a day.
2. The risk of aspiration in a PEG-fed patient may be reduced by:
  - a) lying the patient on their left-hand side during feeding;
  - b) nasogastric tube feeding;
  - c) converting from bolus to continuous feeding;
  - d) slowing the feed if gastric residuals are low.



## **PART 4**

# **PERSONAL AND PROFESSIONAL SKILLS**



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# 40. Education

**Keren Davies and Gerry C.J. Bennett**

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Medicine involves lifelong learning. The importance of education—whether postgraduate medical education for doctors in training or continuing medical education of career grade doctors—has received increasing emphasis. Good postgraduate education and training is likely to result in improved patient care. The General Medical Council (GMC) has stated that “High quality patient care depends on sound education and training” and “You must maintain the standard of your performance by keeping your knowledge and skills up to date throughout your working life”. The Calman recommendations on Specialist Registrar (SpR) training recognised the importance of structured training and the need to support it with regular appraisal and assessment. There are now Royal College curricula, increased awareness of the importance of regular appraisal for all grades of doctor, assessment procedures and the annual reviews. The present consultant body did not have appraisal and assessment while training and until recently had little training in these areas. Consequently, there has been much to learn by those involved in postgraduate education.

In this chapter we look at adult learning, discuss educational needs assessment, suggest how to set educational objectives and describe appraisal and assessment.

## ADULT LEARNING

Why do adults learn? The motivation to learn may be due to external pressure, for example the need to pass an examination, or arise from a personal desire to learn more about a subject or because a problem area is identified.

Adults learn best when:

- They are actively involved in the educational process

- Learning is relevant, with clear aims and objectives that are realistic and, hence, likely to be achieved
- Learners are able to reflect on their own practice and obtain constructive feedback
- Learning is non-threatening and fun.

## THE LEARNING CYCLE AND EDUCATIONAL NEEDS ASSESSMENT

The learning cycle (Figure 1) builds on these principles and relies on individuals reflecting on their own practice and also receiving feedback.

### Educational Needs Assessment

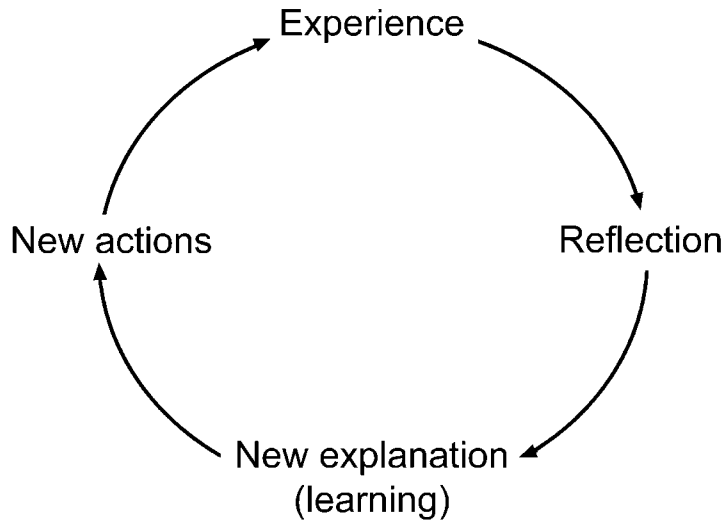
To identify learning needs it is necessary to:

- Identify current knowledge, skills and attitudes
- Compare this baseline assessment with what is required either for the particular post or guided by College curricula
- Identify specific areas for learning and set objectives
- Identify the methods to achieve these objectives.

Learning needs will change during a doctor’s career, therefore the continual cycle of reflection on practice and setting new objectives is important.

### Examples

1. A pre-registration house officer identifies a need to be able to insert a central venous line. This might be achieved by understanding the anatomy and principles of line insertion, observing a senior colleague insert a line, learn-



**Figure 1.** *Experiential learning: experiences as the source of learning and development.*<sup>1</sup>

ing the procedure under supervision and then practise under supervision.

2. A third year specialist registrar identifies his/her learning needs as management skills in team leadership and budget management. This might be achieved by attending a course, or shadowing a consultant colleague, the clinical director or business manager.

#### **Practical point**

Setting objectives on clinical skills and technical skills is often easier than those relating to attitudes and behaviour.

many skills and a lot of knowledge to gain, while an experienced consultant may have very specific learning needs.

Table 1 lists examples of ways used to identify learning needs. Those requiring more information should study the *Good CPD Guide*.<sup>2</sup> Learning objectives should be set by agreement between trainee and educational supervisor during appraisal sessions. A learning contract can be drawn up documents what needs to be learnt and describes the learning programme to achieve it, identifying the resources and support required. The learning needs of different grades of doctors differ, though there is considerable overlap between one grade and the next.

### **Setting Educational Objectives**

There is no accepted definition of an educational need. Learning needs and educational objectives are identified and assessed in terms of knowledge, skills and attitudes. Not all learning is specifically based on identified needs. Some learning will be aimed at developing or reinforcing previously learnt skills and knowledge.

### **How Do We Identify Learning Needs?**

This may be increasingly difficult with career progression. A pre-registration house officer has

#### *Pre-registration house officers (PRHO)*

Having obtained a medical degree, pre-registration house officers have some knowledge, skills and basic professional values. They need to develop more competence in dealing with clinical problems and develop appropriate professional attitudes. House officer learning is based on clinical experience through service delivery under supervision. PRHOs gain knowledge and skills in clinical medicine and in other areas, for example self-management, team working, communication, cultural issues, ethics and law.

Methods of achieving the objectives might include:

**Table 1.** Ways of identifying learning needs.

Method	Examples
Own experience of patient care	Identify areas of ignorance, problems arising from complaints, comparison with competence standards
Clinical team working	Clinical educational meetings, departmental service plans, interdisciplinary working practice
Non-clinical activities	Grand rounds, conferences, research, teaching
Quality activities	Audit, critical incidents, morbidity and mortality meetings
Appraisal and assessment	Meetings with educational supervisor, annual review

- Observation and questioning of more experienced colleagues
- Lectures, tutorials, journal clubs
- Discussion of clinical cases with peers
- Video and audio material, textbooks and journals
- Computer-assisted learning
- Appraisal with educational supervisor
- Reflection on one's own practice and performance by using training records.

### *Senior House Officers (SHO)*

Whilst undertaking general professional training, SHOs develop generic skills, a career direction and some basic specialist skills. Learning is rooted in clinical service, in which the doctor should develop knowledge and skills in specialty areas, train for diplomas and examinations, get experience of research and audit and some organisational experience.

The Royal Colleges of Physicians publish a core curriculum for SHOs in general (internal) medicine and medical specialties. This guides learning needs. The Colleges have also introduced personal training records, which are designed to be a record of general professional training. The Colleges require trainees to undertake regular appraisal.

SHO training should include a departmental educational programme and opportunities for study leave.

### *Specialist Registrars*

The learning needs of specialist registrars are based on developing knowledge and skills in the specialty. The goal is to become a competent independent practitioner and holder of a Certificate of Completion of Specialist Training (CCST).

Learning needs are identified by reviewing previous experience and examining the training requirements of the College curriculum. The methods of achieving needs will include those discussed above and be further informed by the annual review and Record of In Training Assessment (RITA).

### *Consultants*

Continuing medical education (CME) describes consultants' educational activities. There is a requirement for consultants to ensure that their medical education continues. The Royal Colleges have systems for monitoring CME. In addition there are other areas where consultants must develop and maintain skills. These include management skills and educational training—for example, appraisal, information technology and audit skills. These areas are grouped under the umbrella of Continuing Professional Development (CPD). Continuing professional development has come to prominence through the initiative of Clinical Governance and the publication of *A First Class Service* in 1998.<sup>3</sup> From April 2001, all consultants should have a personal development plan which records their needs, what CPD will be undertaken and how the development will be used locally. CPD is additional to continuing medical education, which is monitored by the Royal Colleges.

## **APPRAISAL AND ASSESSMENT**

Both appraisal and assessment are educational tools. Their meanings are often confused. There is some overlap, as assessments may be used in



appraisals, but they should be considered and performed separately.

## Appraisal

### *Definition*

The Standing Committee on Postgraduate Medical and Dental Education defines appraisal as a dialogue focusing on the personal, professional and educational development needs of one of the parties concerned, which produces agreed outcomes.

There are different models of appraisal but the commonest is ‘top down’ (trainer to trainee). Alternative models do exist such as ‘bottom up’ (trainee appraises trainer), ‘peer review’ (e.g. consultant and medical director) and team review. The discussion here is confined to trainer-to-trainee appraisal.

Appraisal is designed to assist personal and career development. It seeks to improve performance through the setting of mutually agreed objectives.

### *Features of Appraisal*

Appraisal:

- Should be continuous and part of day-to-day practice, not an ‘event’
- Is confidential between trainer and trainee
- Involves constructive feedback
- Focuses on the trainee’s needs
- Consists of planned non-threatening meetings between trainee and trainer
- Is concerned with setting personal learning goals and agreeing how to achieve those goals
- Involves periodic review of personal, educational and professional achievements.

Specialist registrars will in the future appraise doctors-in-training who are working with them.

### *How to appraise*

1. Hold an induction session:
  - Inform trainee of process and agree the purpose of the appraisal—i.e. to review performance and to plan the future by discussing individual career developments.

- Set date for first meeting with chosen trainer or educational supervisor.
2. Arrange first meeting early in the post. Set out process and agree rules for appraisal. These should include:
    - Confidentiality/honesty
    - Secured time
    - A suitable environment
    - Setting dates for meetings
    - Ensure trainee understands role in self-appraisal and involvement in discussion (ideally the trainee should talk most)
    - Agree sources of feedback to inform process (for example, ward sister)
    - Agree a method of record keeping.
  3. Trainee prepares for first formal appraisal meeting:
    - By self-appraisal, looking at strengths and areas for development—knowledge, skills, responsibilities and attitudes
    - Reviews ways of realising training needs.
  4. First formal meeting:
    - Trainee explains learning needs, perhaps with reference to training record
    - Trainer responds using experience and knowledge of training requirements
    - Trainee and trainer agree educational objectives
    - Trainee and trainer agree ways of achieving objectives.
  5. Subsequent appraisal meetings at two- to three-month intervals.
    - Trainee reviews progress
    - Trainer collects information from agreed sources
    - Discussion of progress. Give positive feedback first, then discuss problems. Review of learning objectives and ways of achieving them.

Before any session, planning is required to complete any documentation, give enough notice of the meeting, choose a suitable venue, ensure there will be no interruptions and allow adequate time for the meeting.

During the meeting, be comfortable! Agree the agenda, follow the agreed format, and allow the trainee to speak first and for most of the time. When giving feedback, always start with positive comments. Set mutually agreed objectives and take notes of the discussion.

After the meeting, record the main points of discussion and conclusions. Ensure that the trainee has agreed the written record as a summary of meeting.

There is debate about the nature of appraisal records. Some consultants feel the only documentation of appraisal should be the learning objectives and a confirmation that the appraisal meeting took place. Others believe a record should be kept by trainer and trainee.

### *Why do appraisal?*

Proving that appraisal is beneficial is difficult. There is little published confirmatory evidence. The perceived benefits are listed below:

#### *To the trainee*

- Learning needs are identified early.
- Learning opportunities can be identified early.
- The trainee develops self-appraisal and reflective practice skills needed throughout career.
- Progress is reviewed and remedial action taken if there are problems.
- There is an opportunity to give feedback on quality of training received.
- Can improve morale, motivation and confidence.
- Assists career planning.

#### *To the trainer*

- An opportunity to receive feedback on training.
- Allows familiarity with day to day issues affecting trainees.
- An opportunity to develop communication and negotiating skills.
- An opportunity to develop team building and working.
- Allows reflection on own abilities and practice.

Overall, the benefits appear to be:

- Improved delivery of training.
- More effective and efficient training.
- Improvement of morale and motivation.
- Development of team working.
- Improvement of communication.
- Better patient care.

### *Problems with appraisal*

- The confusion in what constitutes appraisal and assessment (see Table 2).
- Lack of training for trainers in appraisal—particularly in giving constructive feedback that concentrates on behaviours and actions, not personalities.
- Lack of awareness of need to support trainees day to day in achieving learning objectives through lack of time or resources.
- Ensuring the most appropriate person is the appraiser and that rapport is established.
- Different grades need different types of appraisal.
- The process may provide evidence of problems involving the health, conduct or competence of the trainee and as such raise issues of patient safety. If such issues arise, stop the appraisal and address the problems through appropriate avenues, for example occupational health, counselling or disciplinary procedures.

### **Assessment**

Assessment is a process whereby a doctor's performance is measured and compared with known criteria. Assessments have always taken

**Table 2.** Features of appraisal and assessment.

	Appraisal	Assessment
Purpose	Educational	Career regulation
Participants	Appraiser and trainee 1:1	Panel and trainee
Topics	Educational, personal professional development	Generic skills, clinical and management skills, competence
Standards	Individual	National and local
Confidential	Yes	No
Documentation	Learning contract Confirmation of meeting	National documents RITA forms
Outcome	Enhanced development	Career progression

place, formally, as examinations, and also informally with observation of clinical practice leading to trainers forming opinions expressed in references.

The purpose of assessment in specialist registrar training is to judge progress against defined criteria based on the curriculum. Trainees have to meet agreed standard to proceed from year to year and to obtain the CCST.

Why do we need assessment?

- To measure academic achievement
- To maintain standards
- To motivate trainees
- To identify trainee's problems
- To evaluate effectiveness of training programmes and trainers

Purpose of assessment:

- To communicate to trainees what is important
- To motivate trainee to learn
- To identify deficiencies and areas for further learning
- To identify where the training programme is weak

### *Features of assessment*

Assessment:

- Is judgmental
- Is measured against defined criteria
- Must strive to be objective
- Should be reproducible
- Should be evidence-based.

### *Assessment of competence*

When examining structured medical training, it is important to ensure that trainees are competent to practise. Assessment of competence is problematic as it is necessary to develop methods to assess performance at all levels of competence. To ensure that national standards are maintained, the methods used must be valid, reliable and sensitive to the task involved.

When measuring performance, there should be a clearly specified and shared understanding of good practice. The four levels of competence described in Miller's pyramid<sup>4</sup> are as follows:

1. **Knowing**—knowledge a trainee must possess. Methods of assessment—multiple choice questions, essay questions or vivas.
2. **Knowing how**—items a trainee must know how to do but not necessarily be able to do at this stage of training. Methods of assessment—patient management problems, case analysis, modified essays and orals.
3. **Showing how**—items trainees must be able to do. This can only be assessed by observing trainee. Methods of assessment—practical examinations, observed clinical cases, Objective Structured Clinical Examinations (OSCEs).
4. **Doing**—the way trainee practises in day-to-day work. The usual method of assessment is to observe the trainee at work.

Most assessments in medical training look at levels 1 and 2. College examinations look at some aspects of level 3.

The assessment of performance is usually based on subjective ratings or training records in which experience is recorded. The quality may be variable and unreliable, especially at levels 3 and 4.

### *Standards for assessment*

Assessment involves observing performance in carrying out a pre-specified task in order to compare performance with a fixed standard. Tasks may be real-life service tasks or tests and examinations.

- The standard may be other people's performance—peer or norm referenced, e.g. MRCP examination. Here candidates are ranked by marks obtained. This is unnecessary when looking at competence as either you are competent or you are not.
- Alternatively, pre-specified criteria are used in a criterion-referenced system, for example the Advanced Life Support (ALS) course. The criteria necessary to prove competence are clearly defined. This may be the ideal, but is problematic in medicine as the higher functions of medicine do not lend themselves to simplistic descriptions. It is, therefore, necessary to rely on the Limen referenced system when the whole doctor patient interaction is assessed.
- The Limen referenced system depends on the expertise of the assessors to set minimum standards required for safety and to recognise incom-

**Table 3.** Methods of assessment. A detailed description and analysis of these and other methods of assessment may be found in the Good Assessment Guide.

Method	Examples
Written examination	Multiple choice questions, essays, extended matching items, dissertation
Patient-based examination	Long cases, short cases, vivas, objective structured clinical examinations
Non clinical cases	Case note review, audit, critical incident review, review of logbooks
Assessment panels	Annual review

petence. The standard is set by the assessors using their experience to determine the minimum standard required for safety.

### *Methods of assessment*

Examples of assessment are given in Table 3.

### *Problems with assessment*

- Assessment, particularly examinations, may drive learning but often there is little or no feedback on performance. Therefore, there is no opportunity to reflect on the learning experience to gain a direction for further development.
- Assessment based on an assessor's opinion will inevitably be subjective and therefore variable. It may not be reliable.
- Difficulties in setting appropriate criteria or standards.
- Most assessments are costly in time and people.

### *The Annual Review of Specialist Training and RITA*

The Royal Colleges publish a curriculum of training for each specialty. On entry to the Specialist registrar grade, the trainee applies for a training record that gives details of the curriculum, expected levels of achievement and the necessary documentation.

An annual review takes place at which the Specialist Registrar's progress is reviewed by a small panel of specialists on behalf of the regional Specialty Training Committee. The assessment used must be valid, reliable, nationally agreed with minimum competence levels, specialty-specific and feasible. Finally, remedial action can be taken if necessary. This process is managed by regional postgraduate deans.

At the annual review, the training record and the trainers' reports are reviewed. The results of the

review are recorded on the appropriate documentation. The penultimate year assessment (PYA) is similar to the annual review in previous years but includes an external representative of the specialty nominated by the Joint Committee on Higher Medical Training (JCHMT). The PYA is important as it provides independent assurance that the trainee's progress is satisfactory and aids setting the final CCST date.

The record of in-training assessment (RITA) provides a record of the annual review and therefore of the trainee's progress through specialist training. It is available for review if any queries are raised at the completion of training. This regulatory form of assessment is for the benefit of patients as it is intended to ensure that doctors who provide medical care unsupervised are competent to do so.

## COMMUNICATION SKILLS

- Introduction
- Principles of communication
- Breaking bad news

### **Introduction**

Medical education does not have an illustrious past when it comes to communication skills. The Consultant ward round could exemplify all that was wrong with an aspect of medicine that was not seen as crucial to being a good and effective doctor as it now is. Medical students suffered the worst, often learning by humiliation. Patients fared little better. They were objects to answer questions, be examined by innumerable people without disquiet and to be consoled with a transient tap on the back of the hand.

Communication skills are now recognised as essential tools. Good communicators may be born but few of us have all the essential elements innately

and we can all be taught many of the core components necessary to elicit a comprehensive and accurate history, and to feed back the results of an examination to our peers, seniors and, most importantly, the patient. Communication skills result in the practice of better medicine, but they also facilitate a more mutually satisfying clinical relationship between patient and doctor and hopefully a less litigious one. Some clinicians will always have more obvious skills, empathy, a gift with words, the common touch. We can all learn the basic principles and improve in areas we may find stressful, such as breaking bad news.

The golden rule is treat your patients as you would want to be treated. Communication skills start with our responsibilities as a human being directed by the Hippocratic oath and focused by ethics and learned skills. Common humanity is an excellent starting place.

### Principles of communication

A useful model for understanding the medical interview is that described by Cohen-Cole and Bird in *The Medical Interview: The Three-Function Approach*.<sup>5</sup> The three functions of their model are:

- Data gathering
- Rapport and relationship building
- Education and motivation.

There is inevitably some overlap between these, but within each, particular behaviours or skills serve to fulfil the goals of the interview.

After qualification many doctors feel confident about their clerking skills. If given a checklist, however, how many of us use all the skills described and to good effect?

Communication objectives:

- Introduce oneself and explore the patient's problems.
- Use verbal and non-verbal skills that help build a rapport and put patients at their ease. Create an atmosphere of trust, respect and comfort in terms of physical ambience and personal interaction.
- Identify and share with the patient their concerns, understanding, expectations and background.
- Identify and share with the patient the goals of the

interview and purposes of the procedures or examination undertaken.

- Elicit accurate information by closed and open questions, reflection, clarification and summarising.
- Understand and use relationship skills that facilitate the expression of information, emotions and provide emotional support to the patient.
- Recognise your reactions to patients.
- Appropriately interrupt only when absolutely necessary and direct the discussion whilst still maintaining a logical and systematic flow of the interview.
- Deal sensitively with the patient's questions. Give relevant information simply and clearly, avoiding jargon and checking understanding.
- Close the patient encounter.
- Reflect on one's strengths and weaknesses.

Developing the above list into an effortless, consistent communication tool can take a professional lifetime.

### Avoiding pitfalls

Introductions are crucial and the bedrock of what follows. They should be straightforward, relatively formal and include eye contact, a greeting, an outstretched hand (expecting a returned handshake) and your name. Remember vision, hearing and comfort. You are often judged by what you write. Remarks such as "difficult, vague historian", or even, "rambling old buffer", written in case notes tell us more about the attitudes and behaviour of the doctor than the patient. Hearing is crucial in many ways.

### Special Aspects of Communication Skills

#### *Breaking bad news*

This special area of communication skills is now a routine part of medical undergraduate learning. As with all communication it is a life-long learning process. It may be helpful to refresh one's memory of the standard teaching techniques used to prepare students (and ourselves) for these emotionally difficult situations. The skills training is usually broken down into three sessions which build upon

each other. The sessions involve the use of role-play and the use of feedback from peers and teachers to facilitate learning.

Role-play can be an excellent tool. An orientation session indicates how the session will be conducted. The teacher highlights what to look for; gives ground rules for participating (safe environment, confidentiality, etc.) and gives the rules of feedback. Before observers feedback, the “learner” role player says how they feel the interview went. Then the “patient” goes next. The observers, who have usually been given behaviours to observe, then comment. Remember that feedback is not the same as criticism; it is part of building a trusting and learning climate.

The first session involves introduction skills and the gathering of accurate data—this involves an analysis of:

- Questioning styles
- Facilitation
- Checking
- Summarising
- Non-verbal behaviour
- Organisational skills of goal setting, orientation, direction and closure.

The second session involves the exploration of patients’ reactions to bad news and demonstrates the skills of emotional support, which include:

- Empathy—acknowledging feelings and showing they are understood
- Ventilation—allowing patients to discuss emotions
- Respect
- Reassurance.

The third and final session shows how a practitioner can talk to and educate a patient about their illness and its management and demonstrates the skills of:

- Achieving understanding through explanations, instructions and checking
- Motivation through positive attribution and praise.

The above pointers are simply a framework on which to hang learned experiences. The emotions

generated within these discussions can be stressful. Recognising that you may need de-briefing as a clinician either by colleagues, mentor or someone specially provided for that purpose is important.

Even though the situations feel difficult it is often the thought of a hard job done well that gives the most satisfaction. I once spent an hour with a patient and her daughter in a follow-up clinic explaining the results of an endoscopy (which revealed gastric cancer) and the process that would follow (referral to a gastric surgeon). The interview was stressful with many tears and obvious fear by both patient and daughter. Many tissues were used, diagrams drawn, tea drunk and repeated summarising and questions asked. I started with discussing abnormal cells and moved gently into a discussion of cancer and the particular difficulties when it occurs in the stomach. As they left, the clinic nurse said she felt ‘drained’. A few weeks later I received a call from the surgeon. He had left the patient and her daughter both hysterical with anxiety and anger in his room as he had used the word “cancer” and they both reacted with adamant denial that this had ever been mentioned. Another lesson learned; they had both stopped listening, through anxiety and fear, after my opening words about abnormal cells. Nothing else had registered and I had missed it.

### Presentations

Giving presentations can instill fear and trepidation. A little nervousness is said to be a good thing by ensuring a sparkling, witty and informative delivery. For many, the result is a dry mouth, stumbling speech and an overwhelming desire to use the toilet. These are some tips for the would-be presenter:

- Know the subject matter and rehearse a delivery for timing and difficult areas.
- Only use technology you are comfortable with—PowerPoint is fine if you can use it (but be prepared if it goes wrong).
- Use *aide-mémoire* cards if you need to.
- Keep overheads/slides simple and embellish with spoken words.
- Face the audience. If you glance at a slide or point to an overhead, remember to turn back or else your voice is lost and the talk becomes one between you and the screen.

- Try not to rush; a slower delivery is usually much more effective.
- Anecdotes, historical facts, occasional jokes can go down very well and make for a memorable performance (but beware).
- For a ‘big’ event, prepare carefully. Have the information you need in another format and on disc.
- Audiences like to take things home—handouts usually go down well and you can embellish the information orally.
- Be prepared for questions. In the event of a nasty one, try not to get defensive. If you had not thought of it, say so and ask to meet the questioner later to discuss it further. If it’s an opinion (and you disagree with it) ask the rest of the audience what they think—hoping to isolate your attacker!
- If someone disproves your results or shows that you made the wrong diagnosis, either thank them or feign a heart attack.
- Before your presentation, remember to empty your bladder and either zip flies or make sure you’re all tucked in.

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4. Miller, G.E. (1990) The Assessment of Skills/Competence/Performance. *Academic Medicine*, **64**(9), September Supplement.
5. Cohen-Cole, S.A. (1991) *The Medical Interview: The Three-function Approach*, Chapter 15: Understanding Emotional Responses of Patients: “Normal Responses”. Chapter 16: Understanding Emotional Responses of Patients: “Maladaptive Reactions”.

## RECOMMENDED READING

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# 41. All you need to know about management in one chapter

**Peter Belfield**

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## WHAT THIS CHAPTER IS ABOUT

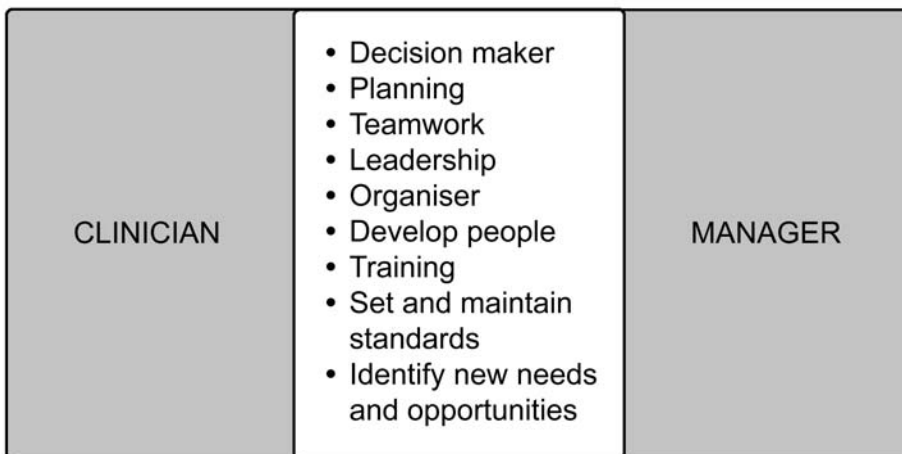
This chapter is a beginner's guide to management and covers a wide range of topics. The aim is to provide knowledge and understanding, useful tips and some resources. It is not an alternative to going on a management course but hopefully will encourage the reader to do some management training. Many books have been written about doctors in management, but I hope this brief chapter will provide a good introduction and lead to use of the resources that are identified.

The following topics will be covered:

- Clinicians working as managers
- Models of clinical management
- The NHS and general management in 2000
- Clinical governance
- Personal management and management training

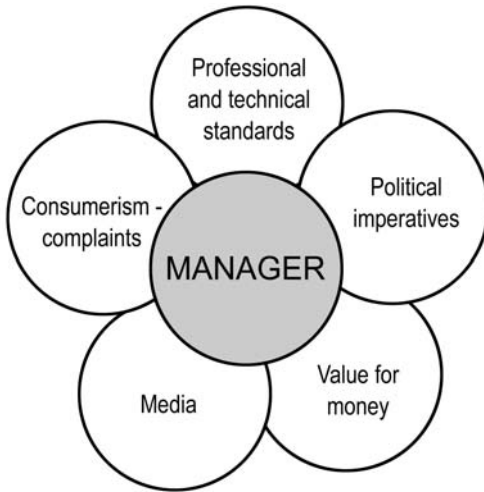
## CLINICIANS WORKING AS MANAGERS

Geriatricians frequently end up as managers and trainees are likely to work with at least one geriatrician who is a manager during their training. Two features of management that the geriatrician finds easy are team working and an interest in service developments. There is a significant overlap between the role of a clinician and a manager (Figure 1). Both clinicians and managers have to make decisions, be effective planners, developers and leaders. For a doctor, this may be leading a group of juniors or a multidisciplinary team, making key decisions about patient care, and developing and training staff. Developing good leadership skills is essential and the successful doctor is the one who understands and appreciates their staff. The manager works with his or her team and has to make difficult decisions about resource



**Figure 1.** Overlap between the role of a clinician and a manager.





**Figure 2.** The managerial world.

allocation or competing bids for service development and also think of career development for colleagues. Both groups have a common agenda of setting and maintaining standards; some of these may be professional, others managerial. This quality assurance underpins clinical governance.

All doctors and consultants do not need to be clinical managers but the modern doctor achieves more if he or she has a better understanding of the managerial world (Figure 2).

#### **Beware of the media:**

- Use your hospital's public relations department
- Go on a media skills day
- Only agree to interviews on your terms, e.g. in your office rather than the studio
- Give live interviews to avoid editing
- Avoid controversy!
- Say no if you feel uncomfortable

The manager and increasingly the clinician have to juggle many balls at once. Obtaining efficiency and best value, with limited resources, while carrying out the latest political imperative under the glare of media attention, becomes an everyday task. An example of this would be managing waiting list targets and the winter bed crisis with the local and national press wanting a "good story". Doctors increasingly get sucked into the managerial world and some management training and understanding

will increasingly be needed. As a consultant, you will be asked to give interviews to the local media about the flu epidemic or patients "stuck" in hospital, waiting for social services. The box highlights some practical tips for handling the media.

## **MODELS OF CLINICAL MANAGEMENT**

Throughout the NHS there is no one perfect system of clinical management. Each Trust has developed its own version but most arrangements are based on specialties and then aggregation of groups of these, e.g. Geriatric Medicine within a Medical Unit. Good descriptions of potential models can be obtained from either the British Association of Medical Managers (BAMM) or the British Medical Association (BMA). The commonest clinical managerial roles are those of Clinical Director, Clinical Coordinator or Lead Clinician. These terms are often interchangeable but there is variation in responsibility for matters such as finance and performance management (management of patients' charter standards, beds etc.).

All Departments of Elderly Medicine should have a clinical manager, although in small District General Hospitals the role might be combined with integration with General Medicine. In larger departments the work might be split between a number of individuals but there should always be clarity in who is doing what.

At some stage in your career as a consultant, it is likely that you will have the opportunity to take on such a role; if this occurs, ask for a job description and be clear on what the role entails. The roles vary a great deal in responsibilities, the time needed to do the job properly and the rewards given.

Doctors are better at some aspects of management than others, e.g. service planning rather than financial control. What are required are doctors who are clinical managers working in partnership with managers complementing each other's strengths and weaknesses. Successful organisations are built on such teamwork. Doctor managers clearly must take on the lead managerial role for clinical governance.

#### **Useful organisations:**

British Association of Medical Managers  
0161 474 1141 or [www.bamm.co.uk](http://www.bamm.co.uk)

British Medical Association. Contact your local office or [www.bma.org.uk](http://www.bma.org.uk)

**THE NHS AND GENERAL MANAGEMENT IN 2000**

The reforms of the incoming Labour Government in the late 1990s have moved the NHS into new, less well-charted territory. What is clear, however, is that the political spotlight will always be on the NHS and consultants must learn to use this in a proactive way rather than just reacting to the next set of ‘bad news’.

**Two key publications from the Department of Health (DH) are:**

- The New Modern Dependable NHS 1997*
- A First Class Service 1998*

The internal market of the Thatcher reforms is now long gone and is steadily being replaced by a much more complex agenda documented in key publications from the DH. Contracting is being steadily replaced with a Health Service where power is shifting to primary care commissioners and we will all work to defined National Service Frameworks.

*The New Modern Dependable NHS* outlines government plans to radically change the NHS with a drive to improve quality both nationally and locally, a drive to modernise and increase efficiency and a move to develop primary care. The quality framework is set out in *A First Class Service* and can be shown schematically as in Figure 3. It has three key elements: the setting of quality standards; the delivery of these standards; and the monitoring of them.

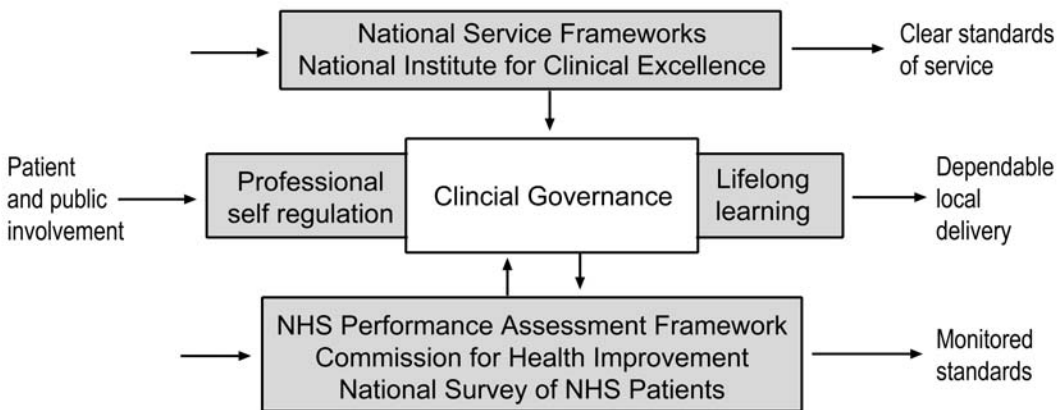
**How to obtain information about the NHS:**

- Get Internet access
- The Department of Health has an excellent website: [www.doh.gov.uk](http://www.doh.gov.uk)
- Includes a What’s New section, press releases, Chief Medical Officer page and an excellent search engine. All of the above documents can be obtained from the DH site.
- NICE has its own website: [www.nice.org.uk](http://www.nice.org.uk)

Key elements of these changes are now coming into place. We have two National Service Frameworks (NSFs): one for mental health (under 65s) and one for coronary heart disease. A NSF for older people is due to be published in early 2001. These are far-reaching documents, which set standards whereby hospitals and their staff will be judged. The aim of National Service Frameworks is to set standards to achieve greater consistency in the availability and quality of services for a range of major care areas and disease groups. This will reduce unacceptable variations in care and standards of treatment, using the best evidence of clinical and cost-effectiveness. The NSF for mental health obliges health and local authorities to work more closely together.

The other source of standards and guidance will be the National Institute for Clinical Excellence (NICE) which will give a strong lead on clinical and cost-effectiveness of treatments, drawing up new guidelines that are evidence based.

Clinical governance will be considered in section 5. Other key elements of ensuring service



**Figure 3.** The quality framework.

delivery are life-long learning and the development of personal development plans based on appraisal for Consultants.

BAMM have produced an excellent publication on appraisal:  
*Appraisal in Action*, 1999. ISBN 1900 120 240.

CHI have a website [www.doh.gov.uk/chi](http://www.doh.gov.uk/chi)  
In Scotland, health matters on the web at [www.scotland.gov.uk/health](http://www.scotland.gov.uk/health) or Scottish Health on the web at [www.show.scot.nhs.uk](http://www.show.scot.nhs.uk)

Standards will be monitored by a number of means, most notably by the Commission for Health Improvement (CHI). CHI is an independent body for England and Wales and is likely to be called into use in Northern Ireland; it is at arm's length from government but with statutory functions. In Scotland, as with many health matters, there are separate arrangements, with a Clinical Standards Board for Scotland, which will operate in a broadly similar way. CHI was formally established in late 1999 and will start its programme of work in April 2000. CHI was founded to facilitate excellent service to every patient; wherever, whenever and whatever they require. CHI has an analogous position to the schools inspectorate; it can visit or be called in. All hospitals, community trusts, and primary care will get a visit at least every four years.

Change and reform are natural processes within the NHS, but the current sets of changes are more radical and far-reaching. The move to a primary care-led NHS continues and the development of Primary Care Trusts will affect the way we all work, but in particular will regulate the way in which General Practitioners work. A key theme of Primary Care Trusts will be joint working between Health and Local Authorities and there will be an inexorable pull towards geriatricians having input into Community Services. This is well documented in a recent editorial by Young and Philp. Such patterns of activity will give us the challenge of working in a dispersed organisation, but will also offer new opportunities to reinvent our speciality.

Future directions for geriatric medicine. John Young and Ian Philp. *BMJ* 2000; 320, 133–134

As we move towards ever more evidence-based practice, we must remember that many of these changes are of unproven effectiveness. However, this is the world we have to live and flourish in.

## CLINICAL GOVERNANCE

Clinical Governance is an attempt to focus attention on improvements in quality in the NHS. All professionals profess to want to improve quality and Clinical Governance contains a number of initiatives, which will improve the care we give to patients. The British Geriatric Society (BGS) has produced a number of good documents on this, which are available at their website.

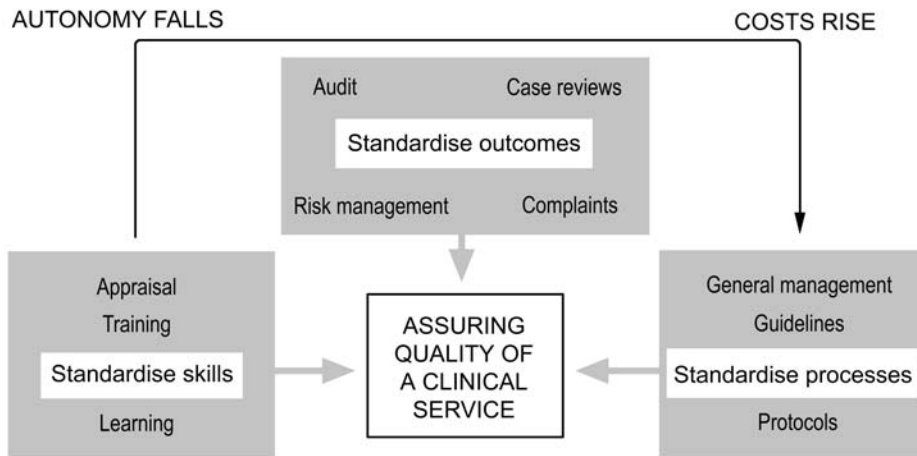
The British Geriatric Society at  
[www.bgs.org.uk](http://www.bgs.org.uk)

A key theme will be continuing professional development, and the appraisal systems that are well used when training junior staff will need to be adapted and continue to be used throughout the consultant career. This will be challenging to consultants as individual autonomy will be reduced, transparency will increase and convergence to a particular way of doing things will be required (Figure 4).

This framework highlights all the elements that make up clinical governance, with professional development, appraisal and learning being required by the individual, a focused review of outcomes and the standardisation of the way we will work in the future. Importantly, it recognises that to get proper improvement in quality, costs will inevitably rise.

In elderly care a departmental assessment of clinical governance can occur with a systematic review of critical incidents, deaths, complaints etc. Figure 5 shows such an approach schematically.

Defining quality of care in elderly services is difficult but quality is something we all aim for in everyday practice. Numerous national and local initiatives highlight the need for evidence-based practice, clinically effective service, use of guidelines and the move towards clinical governance. Much has been written and presented about these initiatives but as yet there is little in the way of practical experience in a busy clinical



**Figure 4.** Clinical governance—key themes and their likely impact on individual autonomy and costs.

department. The agenda of change is enormous and most clinicians welcome the government’s attempts to modernise the health service, putting quality on a similar footing to finance and charter performance. The main concerns are about time and resources to fit this into busy working lives. We all have different perspectives on quality. The patient may have a different view to their carer, the doctor a different view to the nurse—what is clear is that the new agenda of putting quality first puts an equal value on patient experience as clinical result. Public consultation on the clinical safety of acute care in small hospitals is a good reminder that patients often put care in local accessible services ahead of clinical outcome data suggesting that care in the bigger centres is better for them.

The key groups of staff in any drive to measure and improve quality are Consultants—clinical governance won’t work if managers do it to

doctors! Management support is required to help the administrative processes, e.g. produce reports and records and to ensure management action follows lesson learned.

Multidisciplinary audit of selected topics and themes can provide a rich learning environment which promotes joint working. It is surprising, in a specialty where multidisciplinary working is perceived to be the hallmark of good care, that so little true clinical audit has been carried out. Therapists and nurses bring fresh perspectives on problems, and a focus on topics such as falls and readmissions is good for patients, staff and the quality of the service. Positive effects on recruitment and morale can be seen. This audit is generally less threatening to individuals and offers good training opportunities to doctor, nurses and therapists alike.

Audit of deaths and critical incidents is more sensitive. Most hospitals have a reporting mechanism for critical incidents but doctors rarely use it. Nursing staff keep good records of drug errors, falls and the like but doctors rarely report serious adverse events. A regular focus on quality does, however, lead to a greater sharing of ‘learning’ from difficult cases in an informal way, usually at the start or end of a meeting.

Mortality audit is rare in geriatric medicine, which is somewhat surprising in a specialty with high mortality rates. Regular mortality and morbidity meetings have become an everyday part of surgical practice and initiatives such as CEPOD



**Figure 5.** Departmental assessment of clinical governance.

are well regarded as drivers for improvement. Mortality rates for acute elderly care are around 15–20% and this can result in a large number of deaths to review. The first step is to produce a regular mortality report with the names of patients, ward, consultant name, coded cause of death and whether they were referred to the coroner. This in itself can be contentious, with individual consultants “having a bad month”, and access to the report should be restricted to the relevant manager and all consultants. A system of self-referral by individual consultants of “worrying cases”, coroner referral, all postmortems, falls, post-surgical cases and deaths in “intermediate care” provides a significant number of cases to review. There should be one reviewer using a standardised format — the BGS is looking at producing such a form. Notes should be kept of such meetings with a plan for follow-up action.

It is important that we collect accurate mortality information and review readmissions as both of these are part of the national performance measures by which we are judged (Figure 6). This shows a number of indicators that are relevant to elderly care.

We all know that things do go wrong in clinical practice, and definition of a critical incident for an older person is required, e.g. serious adverse drug events such as life-threatening antibiotic allergy. Systems that potentially reduce risk, e.g. hip protectors in fallers, need to be put in place. An excellent book by Rosenthal *et al.* reminds us that medical mishaps are common:

*At least one in every 100 of the activities undertaken by doctors, nurses and others goes wrong*

#### NATIONAL PERFORMANCE MEASURES

- Published annually, six clinical indicators
- Discharge to usual place of residence 56 days after admission with stroke
- 30 day mortality in hospital after fractured neck of femur
- 30 day mortality in hospital after myocardial infarction
- Emergency readmission within 56 days

**Figure 6.** National performance measures.

Complaints are another accessible measure of our services (see the chapter on dealing with complaints by Harwood). There is a direct relationship between the likelihood of a complaint and length of stay and poor outcome. It is therefore no surprise that services for older people deal with large numbers of complaints. In most cases the focus is on the investigative process, responses are often in writing and the whole process is threatening to staff and unsatisfactory to the complainants. Complaints can be reviewed at regular multidisciplinary meetings and can have a high educational value, allowing lessons to be learned.

#### Dos and don'ts of complaints

- Don't bury your head—get on and respond
- Seek help and support from a colleague; talking about complaints helps
- Stick to the facts
- Write notes of conversations with members of staff—you'll forget otherwise
- If the service failed or you did wrong—apologise
- Offer to meet with the complainant; written responses often protract the process
- Send your response after the weekend
- Most complainants want information and to avoid the situation occurring again

Health Service Ombudsman at  
[www.health.ombudsman.org.uk](http://www.health.ombudsman.org.uk)

Complaints are usually handled locally within the Trust; if things are not adequately resolved, a small number (<1%) go on to Independent Clinical Review (ICR). The ICR process is time consuming and involves external review—it should be avoided if at all possible. A final port of call is available to complainants—the Health Service Ombudsman, who deals with a relatively small number of complaints a year (around 3000) and investigates the complaints handling. This process is lengthy and time consuming. The Ombudsman publishes a regular report, which is educationally valuable and is easily reviewed.

As a fourth component of this practical approach to clinical governance, one can look at service

effectiveness. There is a lot of information in this area, with reports from the Audit Commission on fractured neck of femur, regular national audits of stroke and in Leeds we have a stroke database used for looking at outcomes and for service planning.

Clinical governance is about doing things better, working in a truly multidisciplinary way and changing the culture from one of blame to one of support and learning. The current Labour government have promoted this approach, which is here to stay regardless of any party politics.

## PERSONAL MANAGEMENT AND MANAGEMENT TRAINING

The key to managing yourself is to manage your time, manage personal stress and to set clear objectives for what you want to achieve. All this sounds easy and it is the key to sustained progress. Most short management courses focus on personal management. There is much to be gained by taking time out and reflecting on the way in which one works, but what is important is that weaknesses identified are changed. Too many courses allow one to see where you are going wrong, but don't come up with new ways of working that are sustainable. Both as a trainee and then as a consultant you will need to manage your team. Using your time effectively helps you and the staff who work around you. Ultimately it will improve the care of your patients.

There are numerous courses for trainees and consultants on management training. Detailed information on a number of well-recognised schemes is shown in the box.

The King's Fund provide all types of management training: [www.kingsfund.org.uk](http://www.kingsfund.org.uk)  
 BAMB also organise a number of management courses at [www.bamm.co.uk](http://www.bamm.co.uk)  
 Open University put on the Managing Health Services Course at [www.open.ac.uk](http://www.open.ac.uk)

Some Postgraduate Deaneries put on regional courses on a day-release basis. I would recommend a structured course over perhaps a year, such as Managing Health Services, which contains excellent materials and a number of assignments

that can be related to your area of work and has a final examination. For those who want to do more than this, some doctors are now doing MBAs and a small number of trainees identify at an early stage that a managerial career is what they want.

## SUMMARY

- The NHS is changing at a faster pace than ever before.
- Understanding where managers are coming from is helpful.
- Working with managers is desirable.
- The best way to keep up with what is happening in the NHS is the Department of Health website —get connected to the net.
- Clinical governance is going to be time consuming but could mean improvements in quality for patients and staff.
- Manage your time well.

## RECOMMENDED READING

### *Useful books:*

- Rosenthal, M.M. *et al.* (eds.) (1999) *Medical Mishaps*. Open University press. ISBN: 0-335-20258-6.  
 Simpson, J. (ed.) (1995) *Management for Doctors*. BMJ Publishing Group, London. ISBN: 0-7279-0858-8.  
 Young, A. (ed.) (1999) *The Medical manager: A Practical Guide for Clinicians*. BMJ Publishing Group, London.

### *Useful Journals:*

- Clinician in management*. Published quarterly. Journal of British Association of Medical Managers.  
*Health Service Journal*. Published weekly and available electronically at [www.hsj.co.uk](http://www.hsj.co.uk)

### *Useful websites:*

- Department of Health: [www.doh.gov.uk](http://www.doh.gov.uk)  
 The Audit Commission: [www.audit-commission.gov.uk](http://www.audit-commission.gov.uk)  
 A First Class Service: [www.doh.gov.uk/newnhs/quality](http://www.doh.gov.uk/newnhs/quality)

## SELF-ASSESSMENT QUESTIONS

Answer true or false for each question.

1. Features of a good clinician or manager include:
  - a. Leadership

- b. Team working
  - c. Prevarication
  - d. Professionals always know best
  - e. Develop people
- 2. Clinical governance is
    - a. A systematic approach to quality
    - b. A disciplinary procedure
    - c. A government fad
    - d. Just for doctors
    - e. A way of building on audit

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# 42. Preparing for a consultant post

Chris Patterson and Alex Brown

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Strictly speaking, preparation for being a consultant in geriatric medicine begins during the first year as a Specialist Registrar. (See also the chapters on being a successful consultant by Harwood.) In this chapter we deal with those issues which assume importance as registrar time begins to run out and consultant posts beckon:

- When to apply
- Where to apply
- How to apply
- Writing your curriculum vitae (CV)
- The interview
- Assessing a job description
- Starting a new job

## WHEN TO APPLY

Since January 1997 it has been a legal requirement for doctors to be on the General Medical Council (GMC) Specialist Register before taking up a consultant appointment. The process should occur as shown in Figure 1.

The Joint Committee on Higher Medical Training (JCHMT) is supposed to send a CCST application form about two months in advance. Do not assume this will happen. Ring them three months before the expected date.

You can apply for consultant posts within three months of admission to the Specialist Register.

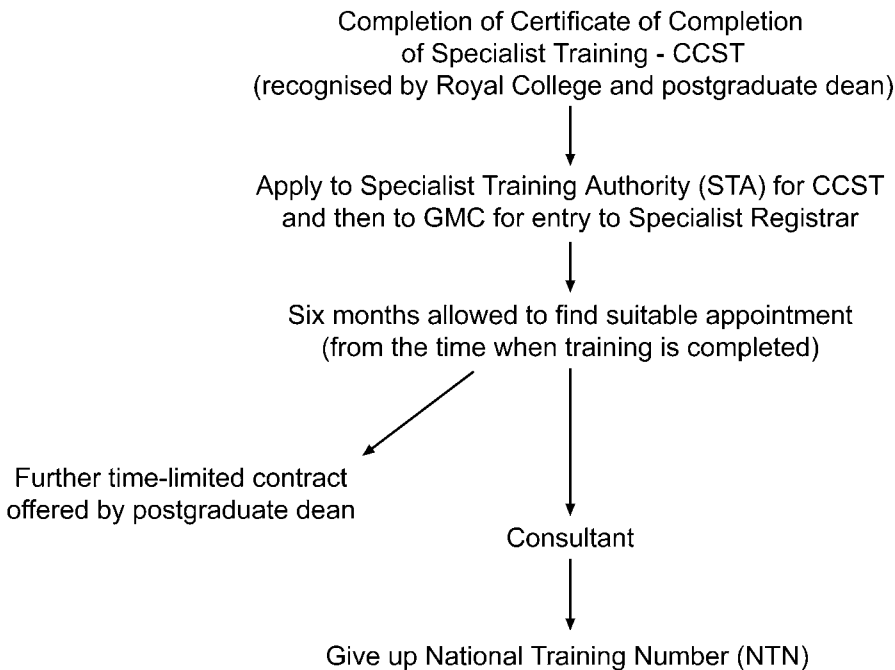


Figure 1.



## WHERE TO APPLY

Personal considerations:

- spouse's job;
- schools;
- travel;
- city vs. rural.

Most locations have good schools and information is now freely available, with league tables and Ofsted reports accessible on the internet. Rural areas have the benefit of less traffic, better access to scenery and more community involvement. Public transport is better developed in cities.

## Teaching Hospital or District General Hospital (DGH)

Potential differences are summarised below:

	Teaching Hospital	DGH
Specialisation	May be highly specialised with little exposure to common complaints	Broad spectrum of disease. Opportunity for subspecialisation
Research	Well-developed structures	Fewer opportunities but no escape, with clinical governance
Teaching	Much opportunity for teaching medical students, trainees	Opportunity for educating other disciplines ? more fulfilling
Competition for job	Likely to be hotly contested	Perceived to be less attractive but rumours usually historical
On call	Infrequent but intense	Frequent but less intense (especially in age-related units)

Remember that nowhere will be perfect. In England, hospitals in the South may have more private practice; in the North and West, living expenses are lower. Jobs in peripheral hospitals may be more 'hands-on' due to fewer junior staff. Doing a locum is a useful way of testing hospitals and departments, and confers an advantage when applying.

## Age-related or Integrated?

It is over-simplistic to believe there are two models of geriatric care. Integration exists in many forms, but in general will involve looking after younger patients. About 50% of consultant posts are now integrated.

Integrated units:

For

- no 'bouncing' of admissions between different medical specialties
- access to specialist medical care
- elderly patients not identified as 'geriatric'
- better junior staff?
- more popular, because of general medicine

Against

- loss of identity of geriatric medicine
- neglect of rehabilitation/continuing care
- busier on-call

Age-related units:

For

- easy referral system
- provide the greatest good to the greatest number
- give identity to geriatric medicine
- no distraction of younger patients

Against

- separation by age rather than need
- difficult to rotate junior staff
- often less well resourced than general medicine

In practice, most departments are suited to local need, and experience should be gained in different models of care to compare and contrast styles of working.

## HOW TO APPLY

Although the *BMJ Classified* and *Hospital Doctor* are worth keeping an eye on, the 'bush telegraph' will warn of imminent jobs.

When the advertisement appears, ring for an application form and go and see the contact person. Speak to as many people as you can before visiting,

as a well-informed, interested candidate creates a good impression. Prepare questions on accommodation, house prices, removals expenses as well as Trust policy, strategic direction and potential hospital mergers.

Make the most of informal visits—many decisions are made before the interview comes around.

## WRITING YOUR CV

### Why Bother?

A good CV will not get you a job; you have to do that yourself. However, a poorly presented CV may only get a cursory inspection before landing in the bin. So first impressions count.

Do not make the mistake of dusting off your old CV, updating it and hoping that it will do. Use it as a template to produce something which is appealing, informative and above all relevant to the post on offer.

### What Needs To Be In It?

Brief personal details, qualifications, management, audit, medical and research experience. Do not include any irrelevancies. Who cares about your GCSE grades and subjects? Make it pertinent to the post; check that you address the person specification. This should come with the information pack after your initial enquiry about the job. It will list both the professional and personal qualities needed to be a successful candidate. If an interest in Orthogeriatrics is essential, do not relegate it to page 3, after hobbies and interests. There is bound to be a compromise between brevity and detail. Ask others to read it, and for their constructive comments.

### Which Format?

Management books list three basic formats—chronological, functional and combined.

#### *Chronological*

This is the most popular. It follows your work history (usually backwards) and is particularly

useful if your career structure has been stable and logical. If you have had gaps, or a change in career direction, then these become all too obvious.

#### *Functional*

This concentrates on skills and responsibilities, usually grouped under general headings: management, audit, medical etc. It tends to ignore dates and is useful if your experience is scattered. However, it is difficult for the reader to pull out exact details and is of limited use for Calman trainees who have had a structured training.

#### *Combined*

As the name suggests, a mixture of functional and chronological. Appointments are listed by date and specific areas highlighted under separate headings.

## CV CHECKLIST

Type: Chronological  
 Functional (limited value)  
 Combined

Areas to cover	Notes
Personal history and contact data	Brief. Use date of birth, rather than age (will not get out of date).
Examination results and institutions	Highlight most relevant. List honours and awards. Include courses that support the application.
Work history and experience	Layout depends on format selected. Try to tailor to job specification. Do not forget management, audit, research, presentations, IT skills, teaching, special interests. Emphasise achievements.
References	Let the referee know. Tell them about the job. Ensure they are likely to give a good reference.

### Further Action

Read it, and ask others for comments. Check grammar and spelling. Is it tailor made for the job? Could the layout be improved?

**DO NOT ACCEPT YOUR FIRST DRAFT!**

## THE INTERVIEW

It's a sobering thought that a 45-minute interview can dictate the next 20–30 years of your life. Interviews are not an efficient form of personnel selection. However, inefficient or not, interviews are how candidates are usually selected, so do not blow your chances by poor interview technique.

### How to Improve Matters

#### *Preparation*

Know the hospital and department. Speak to key people.

- Review your experience for the job.
  - Prepare thoughts to broad questions
  - Try not to give ‘pat’ answers—they sound contrived
  - Look out for ‘hot topics’, whether they be medical, ethical or organisational
- Review your CV.
- Prepare any presentation you have been asked to give.
  - Check what presentation aids will be available, overheads, slide projectors etc.—if you are going ‘high-tech’ (PowerPoint), have you a fallback if it goes wrong on the day?—it is best to keep things simple
  - Stick to the topic
  - Ensure that it has a beginning, a middle and an end
  - Do not run over time
  - Rehearse, rehearse, and rehearse.

A five-minute talk is much more difficult to do than an hour's presentation.

- Practice an interview with friends or colleagues.
- Arrive in good time.

#### *Personal Appearance*

- Well groomed—A professional, confident smart appearance.
- Dress appropriately—Also for pre-interview visits.
- Dress rehearsal—That old suit may not fit, and those new shoes might hurt.

#### *Don't forget*

Be yourself. Do not try to be someone you are not. A Consultant appointment is usually for many years and you cannot keep a façade up for ever.

#### *Finally*

Prior preparation and planning prevent poor performance. Time and effort invested before the interview will seldom be wasted.

## ASSESSING A JOB DESCRIPTION

Consultants are now working harder than ever due to changes in workload, lack of resources and raised public expectations. Increased admissions and reduction of bed numbers have contributed to more stressful working.

Strong recommendations have been made by the Royal College of Physicians in the report *Consultant Physicians working for patients* which specifies conditions and facilities which ought to be provided to allow consultants to work at their optimum. Some of these of particular importance in geriatric medicine (often with the added duties of acute medicine) are given below:

- Acute on-call rota no more than one in five
- No single-handed consultants
- One Consultant per 50,000 population (in elderly care) or per 4,000 people over the age of 75
- Clinics after acute on-call should be cancelled
- Post-take ward rounds with staff who have managed the patients
- All Consultants should have a private office and secretary
- A realistic job plan should be provided
- Adequately funded study leave
- Effective information technology

Job plans are detailed descriptions of duties and responsibilities, and the facilities needed to carry them out. Work is quantified in terms of notional half-days (NHDs) or ‘sessions’. Again, the Royal College provides guidance on job plans to physicians and managers for all specialist physicians. Considerations include patient care (clinics, ward rounds, rehabilitation) and supporting activities (teaching, training, audit, research, management).

When assessing a job description, consider the number of ward rounds and clinics expected (and the number of patients expected to be seen in clinics). Doing five ward rounds per week in three different hospitals leaves little time for other activities. Ensure there is adequate time for administration and subspecialty interests. Timetables tend to get more congested with time, with development of services—it is much easier to take on new responsibilities than to offload existing ones!

## STARTING A NEW JOB

It is often said that clinical practice is the easiest part of being a Consultant. This is true.

Before starting, concentrate on domestic arrangements—houses, schools, crèches. Remember that most crèches have long waiting lists. Find out if you need to live within a certain radius of the hospital. Get on to mailing lists. Even rent a house first until you know the local areas.

Make sure the BMA check the contract and job plan. They may have helpful suggestions. Check out the position regarding secretaries and an office. Offices should be adequately equipped with desk, two chairs, phone, shelves, filing cabinet and computer.

Tips when starting:

- Find out how to claim:
  - Travel expenses
  - Telephone rental
  - Domiciliary visit payments
    - Clarify managerial and administration responsibilities
    - Agree on diary system with secretary

- Filing system
- Use e-mail where possible
- Find out who is who
- Try to avoid first weekend on call
- Let people know of holidays early

Most importantly, politely say no to offers of being on committees—unless they are of interest and importance to you.

## RECOMMENDED READING

### *Essential Reading*

- Consultant Physicians working for patients: Geriatric Medicine and General Internal Medicine. Royal College of Physicians, London, June 1999.
- Gillies, D. (1996) Finding the right consultant job. *BMJ*, **313**: S1–4 (career focus).
- Model workload document for consultants in geriatric medicine: general notes for guidance. British Medical Association, 1995.

### *Background Reading*

- Clarke, J. (1999) *Write your own C.V.* Elliott Rightway books, Kingswood, Surrey.
- Eggert, M. (1999) *The Perfect C.V.* Random House Books, London, 1999.
- Eggert, M. (1999) *The Perfect Interview.* Random House Books, London.
- Most public libraries and good bookshops have a collection of books on CVs and interview skills. A few we liked are listed above:

### *Useful Information*

<http://www.open.gov.uk/ofsted/ofsted.htm> (for OFSTED reports on local schools)



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# 43. How to be a successful consultant

## Time management and organising paperwork

**Rowan H. Harwood**

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An NHS consultant's working time is ruled by his or her fixed sessions. The basic plan is that seven sessions (or 'notional half-days') a week should be 'fixed', that is, taken up doing clinics, ward rounds, case conferences, endoscopy lists and so on. A full-time NHS consultant contract comprises 11 sessions. One session is to cover continuing responsibility, including on-call. That leaves three for all the other things a consultant is supposed to do. Some of these are listed in Table 1.

The prospect of doing all of these meaningfully in three half-days a week is absurd. One problem that consultants face is that the government and senior hospital management appear to be incapable of appreciating this. There are three options:

- Get more done by making better use of your time

**Table 1.** Flexible commitments

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Seeing relatives
Seeing inter-departmental referrals
Research
Domiciliary visits
Administration—letters, enquiries and Trust documents
Committees—local, regional and national
Clinical or Medical director
Lead clinician for parts of service
Continuing medical education
Lecturing
Examining
Undergraduate teaching
SHO/PRHO administration and teaching
Specialist Registrar supervision and training
College tutor
Private practice
Audit and clinical governance

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- Agree that you are not going to do some things
- Delegation.

### MAKING THE BEST USE OF YOUR TIME

Get important things done first. Making lists is a way of giving you an overview of things you would like to achieve, even if some are nebulous and distant (e.g. 'finish MD thesis'). Some things have to be done before others. Other things you will want to do first because you enjoy them. There is a skill in getting the right balance.

How do you work best: long sessions to complete the job, or short bursts to keep concentration? Early mornings or late nights? In office hours or later when you can do it undisturbed? A lot depends on how much you enjoy the task (or fear the consequences of failing to do it). The interests of efficiency will not be served by your trying to do things that you have little stake in or concern about. If you have to do them yourself, these tasks are best despatched with a minimum of time, cost and attention.

Two important skills are:

- Awareness of time requirements for a job
- Appropriate allocation of time.

Neither is easy. You cannot plan (or manage) your time if you have no idea how long a task is going to take. The problem often presents the other way round. You have a fixed amount of time to complete a task. The issue is then how thorough or definitive a job can you do. If something is good enough for its purpose, get on with the next task. If possible, make sure that you get things right first time. Endless iterations are time consuming, and

for some tasks (like answering complaints), the time consequences of not getting it right first time can be considerable.

You must have a diary—paper or electronic organiser. Some hospital computer systems have schedulers, which can be helpful. Decide whether to carry your diary yourself, or if your secretary keeps it. Either way, you must tell her what you are doing when. Blank out whole sessions to free up time for specific tasks. Decide if your secretary can make appointments for you. It is often best for her to ask for a range of possible times for meetings, from which you can choose, if you think that the business deserves a place in your schedule.

Message books also help. Take them seriously, especially returning phone calls when asked. Mobile phones and e-mail make you more accessible than ever before. You may waste a lot of quality time (first thing in the morning) on very low quality work (sorting through irrelevant e-mails). Work out how you can set limits (who is allowed to call you on your mobile phone, can your secretary deal with your e-mails).

## LOSING RESPONSIBILITIES

Some problems you can do something about yourself, some need an organisational response, and others you are probably stuck with for the time being.

Losing responsibilities yourself may have an impact on other people—your department or the whole organisation. If you do not do a job, either someone else has to or the organisation stops providing it. The mechanism for redesigning your timetable is the job plan review, which should take place with your clinical director (or equivalent) annually. The negotiation centres around how best to use your time. Teaching hospital consultants should have no more than six fixed sessions. Clinical academics could argue for fewer.

Not doing clinics or procedures will have income repercussions. Not doing ward work may endanger patients, or at least diminish the quality of their experience. This will be a particular problem in geriatric medicine, where staffing is often stretched. However, NHS Trusts are also paid for undergraduate and postgraduate teaching. Audit and Continuing Medical Education are both necessary professionally, and with the introduction

of clinical governance and ‘re-validation’ of specialist status, will become less optional. Larger Trusts are funded for research and development portfolios to the tune of millions of pounds. Your time is not limitless. There are minimum professional standards to be maintained, but the NHS does not fund you to do much more than the minimum.

If you want to do other things as well, you have to be hard-headed about it. Try not to upset anyone in the process, and make sure that you spend your first two years as a consultant making sure you can do the clinical job you are employed to do.

If you are spending evenings working, decide if this is necessary or wise. You may be doing something that makes your job more enjoyable, or it may be something that has a high enough priority to permit some re-designation of sessions in your job plan. You may, however, have to cut your coat according to your cloth. Remember that the European Working Time directive, a health and safety initiative, applies to consultants (if not to specialist registrars) and limits you to an average 48 hours a week.

The only way the individual can regulate the contents of flexible sessions is to say “no”. The catch is that every request for you to do something is an opportunity as well as a burden. Many of us do geriatric medicine because we think that maintaining the well-being of elderly people is worth doing. We have a responsibility to ourselves, our patients, and our profession, which may be greater than that to our hospital managers and political masters. We may, for example, welcome the opportunity to go to an after-hours meeting where we can hear what other people have to say, and meet potential collaborators for service development or opportunities or research. A request to sit on the advocacy scheme steering group and monitoring committee may not warrant a commitment of your time, but the opportunity to influence a national body, or contribute to a Health Authority policy on your sub-specialty may do. Many of us find teaching enjoyable and worthwhile. How much time you can spend on it depends on your other priorities and competing commitments.

You need an overall strategy. You need to know:

- Where you are
- Where you want to get

- How you might get there
- What might stop you
- What problems will arise if you neglect other aspects of your job.

A development of the ‘just say no’ theme is to deflect responsibilities. Management thinkers tell the story of the monkey, which has to sit on someone’s back. The monkey is a problem, and no-one wants it. When someone brings you a problem, if you say ‘I’ll sort it out’ the monkey jumps onto your back, and is now your responsibility. If you say ‘write me a report about it, search the literature for possible solutions and make me some recommendations’ the monkey remains with the original host. You are not abrogating all responsibility, but you are not going to do all the work either. You have to be subtle. There may be an important counselling element. The individual may need help to define the problem, or to be pointed in the direction of someone or some way of finding solutions. If simply left with the monkey, he or she may feel unsupported. If correctly ‘managed’, a problem represents an opportunity for empowerment and development.

## DELEGATION

You should not do tasks that you do not need to do, and which someone else can do for you. Consultants are highly educated and experienced, scarce, overworked, and relatively highly paid. Therefore it is sensible that they should be supported by other people. The organisation supports you to a degree. Someone collects notes for your clinic, and makes sure that the right drugs are delivered to the ward. Unfortunately, management theorists tend to assume the business model of line management. The people under you are responsible to you for what they do, and, within broad limits, you decide what they do. In the NHS, there are few people who are directly answerable to a consultant (usually a secretary and a couple of junior doctors). Often people who work for you are also answerable to others, such as the Regional Training Committee for specialist registrars. Make the most of the talents that other people have. It makes sense to allow them to operate fully within their competence, without undue duplication or interference. But the amount of delegation you can

do to people for whom you have direct responsibility is limited.

NHS consultants work in teams, but these are not teams that the management theorists would recognise. Nurses, therapists and social workers each have their own teams and professional responsibilities, and different management arrangements. We may lead the team, but have little responsibility for its members and their actions. This has implications for how the team is cultivated and managed. Common purpose is a powerful motivator, but delegation is rather more a matter of persuasion than giving orders. On a rehabilitation ward, responsibility for information gathering and being the main channel of communication with patients, families and other agencies may not lie with the doctor. Extra responsibilities can make others’ jobs more interesting and rewarding—as well as lightening your workload.

The key to teamwork is to ask what is the special and particular skill that you bring to this team, and try to get someone else to do the bits that you do not need to do.

New ways of working are developing in the health service, which may permit more delegation of doctors’ traditional tasks. Psychiatrists have for a long time assigned some assessment and follow-up duties to community psychiatric nurses. Clinical nurse specialists in medical sub-specialties, usually working to well-defined protocols and guidelines, are becoming more common. Continence promotion, community and inter-departmental liaison, tissue viability, pain management, diabetes and respiratory disease are areas where specialist nurses can help the elderly patient. Service development plans will often look more attractive if specialist nurses can be recruited rather than asking for extra consultants.

## MEETINGS

Meetings are often a waste of time. You will be invited to go to a lot—initially it feels good to be asked. Decide if you really need to be present. Insist on an agenda, a start and finishing time, and stick to them. You can agree or disagree with things at meetings, but rarely will you solve problems. It is difficult to keep everyone involved, and impossible to brainstorm solutions, where problems and potential answers have not been thought through.



The worst meetings are those whose sole purpose is to demonstrate that ‘consultation’ has taken place.

Most of the work should be done before and after the meeting. A meeting without preparation is a waste of everyone’s time. The chairperson has a special responsibility for preparation. If you have not prepared, you are open to ambush—positions have to be worked out in advance and you have to think about your response to challenges. Occasionally, you need to follow up points you have made with a letter to the chair, to make sure you have been heard.

You may be able to avoid meetings by offering written submissions to the chair, or by monitoring minutes for items of interest. But beware—unless you are careful, a meeting may decide something in your absence which could affect you.

## MANAGING PAPERWORK

On becoming a consultant, piles of paperwork soon appear on your desk. Most is of little relevance, some is potentially useful but not immediately so, a lot is rubbish, some is important and needs sorting or filing. A tiny fraction of it is material of immense, urgent and crucial importance.

Some people use the ‘single touch technique’—deal with it straight away or bin it. This means having dedicated time for clearing paperwork, but it is tempting to put some things off until you have thought more about them.

Another method is the ‘bring forward file’. You need two filing cabinet drawers, one filled with dividers numbered for the days of the month, which represents the current month. The next is labelled with months of the year. As bits of paper come your way, asking you to go to things or do things, you put them in the appropriate slot for when you have to do it. At the end of the month, you re-distribute next month’s papers to the current month’s drawer.

Your secretary can help. She needs to know what to do with your mail, including that marked

confidential, or private and confidential. Let her have charge of the filing. Be careful with paperwork that is sent for consultation, or which makes you formally aware of something, such as a colleague’s absence. It may not be especially interesting, but may provide your only opportunity to respond.

## SUMMARY

1. Your time is limited and relatively expensive.
2. You cannot do everything, but have the responsibility of ensuring that your service runs smoothly.
3. You have to work around your fixed sessions.
4. After that, decide what is important, what you want to do, and what cannot be avoided, and do it.
5. Try to delegate, but this may take some imagination and may not be easy.
6. If you can think of a better way of doing things, try to negotiate a change in your job plan with your clinical director.
7. If you are working at your limit, say no to things—but remember that every request is an opportunity, in which you may wish to invest some time.
8. Be brutal, but careful, with paperwork or it will overwhelm you.

### *Learning tasks*

Keep a diary of your work activities over a week. Classify the time spent into different activities. Try to persuade a registrar or consultant colleague to do the same, and compare results.

## RECOMMENDED READING

Gray, C. (1998) Time management. *BMJ Career Focus*, 4 April.

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# Dealing with Complaints

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Complaints can be dispiriting and morale-sapping. They may undermine your self-esteem. Most doctors try their best in difficult circumstances, struggling with difficult diagnoses and management, sharing disappointing outcomes (death, disability, institutionalisation), being under-resourced and understaffed, making judgements in good faith. Given all this, complaints can be hard to take and may provoke feelings of anger and injustice in the recipient.

The goal in dealing with complaints is to make life as pleasant as possible for everyone. Aim to minimise stress and discomfiture, for yourself and your teams, and for patients and relatives.

## PREVENTION

This is mostly common sense, good doctoring and an appreciation of human nature. As a specialty, we are generally blessed with fewer complaints than others. Table 1 offers some hints.

**Table 1.** Preventing complaints

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Good, up-to-date, clinical practice  
Communication and courtesy, with patient, relatives and carers  
Know your limits  
Do not promise the earth  
Ask colleagues if you are in doubt  
Make thorough, contemporaneous notes and letters

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## WHOSE GOALS?

Complaints have become the focus of much public relations management. The consumerist philosophy welcomes complaints as important customer feedback and part of quality improvement. This may be true, at least in part, but your employer's objectives may not be the same as your own.

Employers want to:

- Meet their statutory duties (e.g. replying to complaints within a short time)
- Avoid expense
- Maintain the image of the organisation.

Your own objectives may have more to do with:

- Personal, professional vindication
- Establishing and demonstrating the truth
- Avoiding being made the scapegoat for organisational failures, including under-resourcing.

If the Trust offers a couple of thousand pounds to pay off a complainant who has made an unjustified complaint, they are often doing so because defending and winning the case would cost them more. Despite the vicarious legal liability of Trusts for your actions, membership of a medical defence organisation is still a necessity.

## TYPES OF COMPLAINTS

Complaints arrive by different routes (Table 2), and to some extent what you do depends on the route.

**Table 2.** Complaints arrive by different routes.

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Verbally  
Letter to Chief Executive  
Letter via MP, or Community Health Council, relative, or GP  
Letter from solicitor or writ

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Complaints can be divided broadly into those that are justified and those that are not. Sometimes, justified grievances come mixed up with ones that are not. You need to know what you are dealing with:

- What is being complained about, point by point (this may not be obvious from a letter)
- At whom the complaint is directed
- What the complainant wants.

## RESPONDING TO COMPLAINTS

1. If the complaint is not justified, response is usually a matter of explanation. You may need to see complaints as part of a grieving process. This may include a phase of anger and blame.
2. If the complaint is not against you, or those for whom you are directly responsible (such as ambulances, car parks, catering or nurses), either:
  - agree with the complainant if you think what is said is justified, or
  - try not to get involved.

You may, however, still need to support your team. ‘Collective responsibility’ cuts both ways. Decisions are shared, but one individual has to remain accountable, usually the consultant. For example, a decision to attempt a trial of discharge is made by the ‘team’ and not the individual, but the consultant may be left to deal with the complaint when it goes wrong.

It is not professional to undermine or blame colleagues (medical or otherwise), or appear to do so. Take a charitable view of others’ actions. You cannot speak for what others have done in circumstances that you have not been fully informed about.

3. If the complaint is justified, there may be mitigating circumstances (for example; staff were away, workload was too high) in which case:
  - apologise;
  - try to pass the responsibility on to management to find a solution;
  - if you can, use complaints to help you fight other battles (such as over numbers of nurses or therapists).
4. If the complaint is against a member of staff for whom you have responsibility, primarily junior medical colleagues, you must decide if it is a training issue or a disciplinary issue.

Training issues are far easier to manage. You must tease out the core of the problem and propose

remedial action. This may be:

- Awareness and re-assurance about future performance
- Increased levels of supervision
- Additional training.

If you think disciplinary issues are involved, involve your clinical director and personnel department or postgraduate dean early. The process becomes quasi-judicial, and unless proper procedures are followed, the case may fail, and you risk being accused of one or other form of discrimination.

5. How do you deal with a justified complaint against yourself? Given the uncertainties that beset medicine, and the fine judgements that are often involved, it may not be easy to know if a complaint is justified or not. You can:
  - provide an explanation;
  - apologise for the unfortunate outcome;
  - say you have learned from it, if you have made a mistake;
  - say what you propose doing to prevent a recurrence.

It is important to know what redress the complainant wants. The official NHS complaints procedure will soon roll into action. If it seems to be getting serious:

- Involve a colleague to talk it through and for support;
- Ask the advice of your medical defence organisation.

## THE FORMAL PROCEDURE FOR RESOLVING COMPLAINTS AGAINST THE NHS

A procedure designed to try to improve satisfaction with the complaints procedure, and reduce the amount of medical negligence litigation, was introduced in 1996, following the report of the Wilson Committee. It does not apply in cases where legal action is intended. There are two parts:

- Local Resolution
- Independent Review

The process aims to be conciliatory, and most cases should be dealt with successfully through local resolution. Only if still not satisfied, can the complainant call for an Independent Review.

Complainants are urged first to seek a meeting with the consultant involved.

- If ward or nursing issues are involved, it will often be useful to have a senior nurse from the ward present.
- If any other disciplines or individuals seem likely to be important, then invite them. Otherwise your failure to be able to comment on issues outside your jurisdiction and expertise could be interpreted as evasion or buck-passing.
- Make the meeting less intimidating by limiting the number of professional participants.
- Encourage the complainant to bring a friend or supporter. It may help to defuse tense situations, and enhance later recall of what was said. The supporter may be calmer, or otherwise an ally in judging the reasonableness of judgements.

Remember the unfortunate possibility of physical assault on yourself from an aggrieved complainant.

- Do not tolerate verbal or physical threats or abuse.
- If a meeting is getting bad tempered, suggest that it be reconvened later on condition that the complainant is willing to discuss things in a civilised manner.
- Otherwise, terminate the process, and refer it to your Trust complaints manager.

Once a complaint is put in writing, a more formal process commences.

- Trusts must have a complaints procedure, which must be publicised.
- They must have a designated complaints manager (who may go under various other names, such as 'consumer relations manager').
- The Chief Executive must respond in writing to any written, signed, complaint.
- Full investigation and resolution should occur within 20 working days, so requests for responses to complaints must be dealt with rapidly.

The process must demonstrate that:

- The complainant has been listened to
- Their concerns have been investigated

- Their concerns have been responded to, including an apology and measures to prevent recurrence, if appropriate.

You may feel that your time is better spent doing other things, especially if the complaint is wholly unjustified, but rules are rules.

If the complainant is not satisfied with the initial response, further investigation and attempts at conciliation may be initiated. This will involve more letter writing, and meetings, often convened and facilitated by the complaints manager, or an independent conciliator employed for the purpose. There is a premium on getting complaints resolved at the earliest possible stage.

At the end of the local resolution process, the complainant is informed that he or she has the right to ask for an Independent Review. A review panel comprises:

- The chair (a lay person nominated by the NHS Executive Regional Office)
- The convener (who is a lay, non-executive director or other person appointed by the Trust and who is expected to act in an independent manner)
- A purchaser representative (appointed by the Health Authority).

A request for a review is considered by the panel convener and the prospective chair. If the complaint raises clinical issues, advice is sought from an assessor, a professional from the appropriate discipline and speciality, appointed by the NHS Regional Office. If the chair and the convener think it is worthwhile, a review panel will be convened. The request will be refused, if:

- Further efforts at conciliation are possible
- The local resolution process has exhausted all practical action that could be taken
- Litigation is intended
- There is a case for a disciplinary investigation.

If you have already given a full explanation of what occurred, apologised if something went wrong and stated what steps are being taken to prevent recurrence, there will be no Independent Review. Make sure you do these things first time around.

The Independent Review panel aims to resolve the grievance in a conciliatory way. The complainant

and complained against have a right to be heard by the panel, and accompanied by someone else for support, but may not be legally represented. Expert clinical evidence may be taken about the case and its management. The panel writes a report, which is confidential, detailing its conclusions, the evidence for them, and its recommendations.

If the complainant is still not satisfied, he or she can appeal to the Health Services Commissioner ('Ombudsman'), who may investigate further. Many complaints taken to the Ombudsman are about the fairness of the process of dealing with complaints. A sympathetic attitude can help avoid the impression of unfairness. As with a request for an Independent Review, the Ombudsman can opt not to consider a case if everything has already been done that should have been done.

## LEGAL PROCEEDINGS

At any stage the complainant may commence litigation, generally seeking damages for personal injury, on the basis that:

- the care received was negligent;
- loss has been incurred;
- the loss was a result of the negligent actions.

Other forms of legal proceedings may include charges of assault or manslaughter. If you are involved, contact your defence organisation and Trust solicitor for advice and guidance as soon as possible.

## DISCIPLINARY ACTION

Disciplinary action is best avoided. In the case of trainee medical staff, if a problem can be seen as a training or counselling issue, and addressed accordingly, life will be much easier than if disciplinary action is invoked.

Alleged misconduct may be:

- Professional (matters relating to medical practice, such as competence, confidentiality and ethics—most notoriously, sexual ethics)
- Personal (matters of honesty, fraud, personal and professional relationships).

Some issues, such as drug and alcohol abuse, cut across both types. Sanctions include:

- Verbal or written warnings
- Suspension (said to be a neutral act, not implying guilt)
- Termination of your contract.

You may become involved with allegations about the conduct of one of your colleagues, junior staff, or one of the other professionals with whom you work. Personal misconduct is generally dealt with via policies and procedures set by the employer or Trust, and is quicker and easier to manage. Professional misconduct is dealt with under government-prescribed guidelines, and involves the establishment of an independent committee of inquiry. There are due processes to be gone through, and, initially at least, it will be in the Trust's interest to resolve things amicably.

If you are making the accusations, or receive accusations, involve your personnel department and the postgraduate dean immediately. If you are the subject of accusations, contact the British Medical Association or your defence organisation.

## COMPLAINING AGAINST PATIENTS OR RELATIVES

Sometimes relationships break down. Abuse and verbal or physical threats do occur. If a patient is involved, we need to be sure that the unacceptable behaviour is not part of the (psycho-)pathology we are dealing with, before we go any further. If relationships break down to the extent that judgements are affected and further management is impossible:

- Remember that professional responsibility and legal duty of care override feelings of personal hurt
- Talk to the GP—he or she may be able to add valuable and unexpected background
- Try to arrange for a colleague to take over the case.

Relatives may be abusive, use threats or interfere with other patients or the ward routine. This may make their presence on the ward untenable.

- Unacceptable behaviour must be pointed out to the offender.
- Try to negotiate ground rules about conduct.
- If problems persist, involve senior Trust medical, nursing and legal management (with a view to avoiding or defending future complaints).
- If possible, give a written warning threatening visiting time restrictions or exclusion from the ward (relatives have no absolute right of access to the hospital).
- If all else fails, carry out your threats (the hospital security guards or police may have to be involved).

### **FINALLY**

Do not lie, do not cover up, never try to alter records. There are few ways of getting into real trouble as a consultant, but these are amongst them.

### **SUMMARY**

1. Prevent complaints by being competent, communicative and courteous.
2. Your employer's goals in dealing with complaints may not concur with yours—membership of a medical defence organisation protects your interests.

3. Unjustified complaints may be part of a grieving process.
4. Identify the core of a complaint, the key issues, and who is responsible for them.
5. A complainant is entitled to an explanation, an apology if something went wrong, and a description of measures to prevent recurrence if appropriate, and within a short time.
6. Complaints may be dealt with verbally, but a formal 'local resolution procedure' is established for written complaints.
7. Try to make sure you deal with a complaint adequately first time. The system gets increasingly complicated and time consuming if you do not.
8. Training issues are easier to deal with than disciplinary issues.

### *Learning task*

Ask your clinical director or complaints manager for an analysis of how many written complaints were received in the previous year, and what happened to them. Ask if you can see some copies of Chief Executive's letters responding to complainants to your directorate. Ask your consultant to let you draft the reply if a letter of complaint arrives about a patient with whom you have been involved.

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# Maintaining Morale

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Maintaining morale can be a problem in the NHS. Many consultants retire early, some abuse alcohol, others keep their interest up doing private practice. For an organisation of its size and importance, the NHS is poorly equipped, under-staffed and, at times, chaotically run. Salaries and working conditions for many staff are poor, and doctors get little thanks or appreciation from our political masters. Even job security, the corner-stone of compensation for the disadvantages of working for a monopoly, public sector employer, is compromised by constant revolution in the modern NHS.

It helps if those around you are motivated and contented, so there are two aspects to maintaining morale:

- your own;
- other people's.

Good working relationships are unlikely if you are rude, arrogant, lazy, or persistently late. Control these habits if you are prone to them. What you do when you see them in others requires first-rate people-management skills, tact, honesty and courage.

People need to feel valued and supported. They should:

- Have the right tools for the job (skills, manpower, equipment)
- Have someone who cares and fights for them if they do not
- Know what is expected of them
- Know their job is worth doing (especially if it is not glamorous)
- Be proud of doing things that others cannot do (like nursing a delirious patient with pneumonia)
- Be told, congratulated and thanked when they get it right.

Junior doctors in particular are not used to being thanked or congratulated. Often the only feedback they get is when there are problems. Feedback is both necessary and welcome.

## TEAMWORK

Many important ideas for maintaining morale come from the philosophy of team building and leadership. We belong to a web of different teams:

- Ward-based inter-disciplinary teams, who have responsibility for planning and delivering treatment for patients, and ensuring safe discharge from hospital
- Teams with our medical colleagues, from the same discipline or others (old age psychiatry, general medicine, orthopaedics)
- Sub-specialty teams (stroke, continence);
- Management teams
- Educational teams
- Research teams.

Teams which function well produce results that individuals working alone cannot. They are worth cultivating. Doctors, by virtue of their education, experience and responsibilities, often assume the role of leader. Sometimes it may be more convenient for a social worker or nurse to lead. For example, our continence advisory service is 'nurse led' and 'medically supported'. There are some ground-rules for successful leadership:

- Leaders do not just give orders, but they enable people to do their jobs better
- Team members enable their leaders to lead
- They do so because it is in their interest, making it easier for them to do their own jobs, and helping to achieve a worthwhile common goal.

There are some specific leadership functions:

- Integrating information
- Maintaining momentum
- Helping set goals
- Making or confirming decisions.

Team members also needs a set of working principles:

- Clear and agreed roles and duties
- Equal commitment
- Shared responsibility
- Identification and use of individuals' strengths;
- Clear communication and sharing of information
- Honest, constructive feedback, including thanks and praise
- Mutual support (e.g. when things go wrong).

The leader has both to contribute something positive, and be seen to contribute. Doctors can get a little confused over this, especially team-working doctors like geriatricians. We exist neither to sort out social problems (social workers are better at it), nor to act as identikit generic rehabilitation workers. What we do (that others, by and large, do not do) is to:

- Make diagnoses, and explain them to others (patients, families, nurses, therapists)
- Prescribe specific preventative, curative or palliative medical treatments
- Make prognoses (although generally no-one is very good at this).

Our main contribution to the team is to get the general medicine right. The team needs an explanation of what is going on, and what the future may hold, in bio-medical terms. Only after that can we consider the disabilities, handicaps, family, environmental and social issues. Diagnosis-free management is sometimes necessary, but is always beset with uncertainty and is unsatisfactory. Unless we understand our specific skills, we cannot contribute to the team, let alone lead it.

It is easy for some individuals to dominate a meeting, so it is important to be aware of who is contributing and who is not, so that the basic grade physiotherapist or junior student nurse can have their say. New or visiting members need a proper

introduction and to be put at their ease. When it comes to decisions, these should be largely by consensus. If someone demurs, their position must be listened to (they may be right) and at the very least acknowledged and appreciated (even if not agreed with or acted upon). Otherwise there will be resentment.

Healthcare teams are different from many other teams.

- Teams in industry are characterised by a line management structure—the leader has direct managerial responsibility over the team members.
- Doctors work with nurses, therapists and social workers, rather than managing them. The doctor is not in a position to tell a therapist what to do. He or she has to get them to agree.

This encourages a positive working style, and removes some of the risk of being overbearing. For most of the things we ask our colleagues to do, there is usually no problem. However, demarcation issues sometimes arise—for example, over whether a nurse's duties involve giving intravenous drugs, doing mini-mental state examinations, or wound debridement.

The teams we work with are inherently unstable. Staff turnover is high, because of problems in recruitment and retention, and internal rotations of therapists. This has the virtue of the continual injection of fresh personalities and ideas, but means everyone must remain flexible. For example, the person who takes the lead over liaising with families about discharge arrangements may vary between doctor, occupational therapist and nurses.

## PERSONAL MORALE AND STRESS

Being a member of positive, supportive, successful teams helps. Sometimes overwhelming external forces (personal, health, social, domestic) can dominate.

Personal goals vary. Elderly people, their situation and problems, may be the driving force into which you wish to channel all your personal abilities and energy. For others it is a job, to be done well, but to be kept firmly in its place. Some thinkers on this problem have defined three spheres:



- work;
- domestic;
- personal.

The attention each receives will vary from person to person, job to job, or with time. To ignore one completely, or to take up responsibilities in one area only to neglect those in another, is to invite problems. An obvious example is work squeezing out family. Or the combination of work and family excluding time for leisure. As a minimum, it is wise to be aware, at least, of your own responsibilities, commitments and goals in each domain.

Failure to address underlying tensions and conflicts results in stress. This is of concern to management and employers as well as the individual. Stress reduces work performance, results in increased complaints and sick leave, and stress has been the subject of personal injury litigation. Employers have a duty of care to minimise foreseeable work-related stress. Consultants live in something of a no-man's-land in this respect. They are both part of the establishment, the management structure, and yet are 'employees'. They are in a position to see both sides. We are not helped by the fact that throughout our lives we have been achieving, can-do, successful, coping types, and expect the same of our colleagues. We probably have greater resources than most to cope with life's difficulties, but it means that the environment is not always sympathetic when we run into trouble. Mild degrees of pressure can be a motivator, and a defence against boredom. Where stress becomes troublesome will vary between individuals, so your colleagues' ability to cope is not necessarily a sign that you should be (or vice versa).

Stress is defined as:

- the emotional and physical distress which results from the inability of our coping mechanisms to deal adequately with the pressures of life.

There are plenty of pressures in medicine: workload, patients' expectations, competing demands (clinical, managerial, educational, research), inadequate resources, lack of appreciation. Like many such problems, stress is better addressed overtly and pro-actively rather than left to smoulder (Table 3).

**Table 3.** Dealing with stress.

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Make it an acceptable issue for discussion
If you are stressed, admit it
Identify the sources of stress
Say 'no', if you are working to your limit
Make time for exercise and leisure activities
Avoid caffeine, smoking, alcohol and overeating
Get enough sleep
Be positive and optimistic
Be sensitive to stress in others
Avoid the battleground mentality
Plan ahead, manage your time
Take sick leave if you need it

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## HELPING

As a consultant, you will often be approached for help about non-clinical matters by junior medical staff, colleagues, and other staff. They may need advice, to share ideas, to discuss a work problem, start a research project, or it may be something much more personal. Asking for help can be threatening, and may be perceived as weakness or inadequacy. Treat requests:

- Carefully—you may misjudge what is being asked
- Discreetly—assume confidentiality is expected and respect it
- Sensitive—put people at their ease and see their point of view.

In the counselling literature there are six different types of helping. Each can be useful at times, and each will be the most appropriate response to some requests for help.

- *Giving information* entails passing on facts or knowledge. Lack of information can make decision-making impossible. Providing information is an easy solution.
- *Advice* involves some degree of analysis and judgement of a problem, and the forming of an opinion as to the best response. This can be useful, but is limited by the amount of information on which the advice is based, and the possibility

that the advisor has different values and priorities from the person seeking help.

- *Direct action* means doing something — talking to someone, writing a letter or mediating in a dispute. This provides for an immediate need, but direct action is inevitably short term, and you cannot do everything for everyone yourself.
- *Changing systems* may have a more far-reaching effect. Systems often limit how effectively we can work. One of the precepts of ‘total quality management’ is that you should not blame the workers for problems — they are probably doing their best in the circumstances. You need to look at the system to find out where improvements can be made.
- *Teaching* involves helping someone to gain knowledge or skills that they need to do a job or accomplish some other objective.
- *Counselling* is ‘an empowering process of skilled listening, in which the listener enables the speaker to gain insight and understanding from what they are saying’. The person is helped to explore problems and different ways of dealing with them, so they can decide what to do.

## COUNSELLING

Some people make a career out of counselling, and other people’s hearts sink at the very mention of the word. A good counsellor requires personal skill, and at least some training and direction. Many doctors already have many of the necessary skills. We can adopt counselling methods as part of our everyday clinical and managerial repertoire. The intention is to help people understand themselves and cope better, function more effectively and gain in self-confidence.

Counselling aims:

- To help someone explore and understand a problem for themselves
- To help them to discover the most appropriate action or change
- It does not aim to offer advice

Some basic attitudes are important:

- Acceptance—the person seeking help must trust you and feel that you accept them in their situation without prejudice or judgement. Negating or

devaluing a perception or experience is unlikely to help.

- Respect—courtesy and attention, active listening and non-judgementalism.
- Empathy—the ability to put yourself in their shoes.
- Genuineness—personal warmth (open posture, eye contact, smiling), appropriate self-disclosure (sharing similar situations from your own experience), and consistency between your verbal and non-verbal behaviour.

There are also some specific skills to master. Some of these are similar to clinical history taking, but are more open-ended and less directive, since some of the benefits stem from the self-discovery process, as well as the solution identified:

1. Exploring and clarifying skills—to define the problems:
  - asking open questions;
  - probing for details by repeating or reflecting key ideas;
  - asking for specific, concrete examples, rather than vague generalisations;
  - pointing out inconsistencies and discrepancies;
  - summarising the focus of the problems.
2. Action skills—to help the person make plans and implement them.

Gaining these skills can form a part of continuing professional development, and attending counselling courses would be a valuable use of study leave time in your early years as a consultant.

## APPRAISAL

If you have people doing things for you, you cannot escape telling them how they are getting on. Appraisal is related to counselling, but focuses specifically on:

- Work expectations
- Work performance
- Development needs.

The same skills of respect, empathy and genuineness are required, and a process of active listening, clarifying, summarising, objective setting

and problem solving will be gone through. In contrast to personal counselling, the agenda is more set, and the interview is more appraiser-led.

The starting point for appraisal is an agreed set of goals or objectives. This means having a common understanding of what level of performance is expected, and what success might look like. Actual performance can then be compared with the standard. An appraisal is developmental rather than judgmental, and will only be effective if ‘owned’ by both appraiser and appraisee. A good appraisal should be supportive and enjoyable.

We should all have an annual appraisal and job plan review with our medical or clinical director. Participation should be active. Most of the time, however, we will be doing the appraising. You may undertake an appraisal with a trainee as a one-off, but ideally the process should be longer-term and iterative. The output of one appraisal feeds into the next. You may be mentor to a SHO going through a general medical rotation, providing continuity through an otherwise fragmented patchwork of training. Alternatively, you may have a staff grade, associate specialist or clinical assistant, with whom a longer-term relationship can be developed. Try to undertake appraisals six-monthly or yearly.

In an appraisal:

- The purpose should be clearly explained to reduce the sense of threat.
- Pre-prepared questionnaires can provide focus and jog memories.
- If you are lucky (or skilful), the appraisee will do most of the talking—and analysis of their own performance.
- All feedback must concentrate on specific and observable behaviours—so behaviour is reinforced or can be changed.
- Always start with something positive.
- Strengths, weaknesses, successes and failures, objectives reached and needs-become-apparent are all discussed.
- Solutions to problems can be negotiated.
- You may tactfully have to confront aspects of unsatisfactory performance of which the trainee is unaware.
- Negative feedback must be made helpful and never aggressive and destructive.
- Concentrate on one or two important points if most of your appraisal is negative—don’t let loose a deluge of criticism.

- Criticisms should be justified with facts and concrete examples, not feelings and generalisations.

Good appraisal can help openness and trust to develop. It can help fulfil the basic requirements of good morale—knowing what is expected and how well this is being achieved.

## SICK LEAVE

According to a recent statement by the NHS Director of Human Resources, doctors suffer from ‘persistent presenteeism’. Whereas nurses spend about 5% of their time off sick, for doctors the figure is about 1%. When you take into account the few doctors with long-term problems like mental illness or bad backs, that means most of us are never off sick.

Remember, however, that being a consultant is playing a long game—thirty years or so. What you do has to be sustainable. Do not kill yourself for the NHS. Also, remember that if you are incapacitated or under the weather, your judgement and clinical performance might not be at its best. Take your sick leave if you need it.

## SUMMARY

1. Good morale is important for a service to work well. Morale should be actively managed, not left with a life of its own.
2. Being a team member with explicit, worthwhile, achievable goals helps morale.
3. Team members should clearly understand what they contribute to the team, and the leader should help members to do their jobs better and achieve more.
4. Stress is the emotional and physical distress which results from the inability of our coping mechanisms to deal adequately with the pressures of life.
5. Stress is avoided by resolving tensions and conflicts as they arise, in particular balancing the work, domestic and personal spheres. Where stress is a problem, its underlying causes must be identified and tackled.
6. Requests for help may be fulfilled by giving information, advice, taking direct action, changing systems, teaching or counselling.

7. Counselling aims to help people to understand their problems and explore solutions by creating a supportive, non-judgemental relationship, by probing and clarifying issues and identifying potential solutions. It will often be more effective or useful than other forms of helping.
8. Appraisal ensures that expectations are understood, that feedback on performance is given, and that training and development needs are

identified. Junior doctors almost universally want more feedback on their performance, and do not know how to ask their consultants for it.

### **RECOMMENDED READING**

Haman, H. and Irving, S. (1998) *Making sense of personnel management*. Oxford: Radcliffe Medical Press.

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# Keeping Up To Date

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One eminent British geriatrician has described our role as being a ‘jack of all trades and master of one’. The breadth of interest and medical expertise we use in geriatric medicine is what attracted many of us into the specialty. The problem here is knowing our limitations. Expert medicine is characterised by what goes on at the boundaries. The core should be reasonably well known, or fairly easy to find out about. The edges of knowledge are when familiarity and more narrowly defined expertise come in.

## WHAT TO STUDY

How do we know what to concentrate on? Our current regime of continuing medical education (CME) requires that we:

- self-assess our abilities;
- compare with the needs of our clinical practice;
- arrange our educational activities accordingly.

Unfortunately, most people attending most CME events do not need to be there. There are several reasons for this:

- We enjoy things we know we are interested in.
- We never know when we are about to hear something new.
- There is a social element to many meetings—we need informal interchange with like-minded people doing similar things to us in different places with different problems.

If you are involved in providing a sub-specialist service, or research, you will need to maintain greater depth than you will on other topics. From the service point of view, however, you will probably manage your specialist workload more impressively than something you might meet on a general medical take once a year. Patients (and,

increasingly, the institutions of the NHS) demand the same quality of service for each.

Try to keep your medical education broad. Sometimes, you will learn things from paediatric or psychiatric meetings. If you keep going to the same general meetings year-in, year-out your return will be progressively less. Vary the special interests: osteoporosis, falls, Parkinson’s disease, continence, blood pressure, rheumatology, psychiatry.

## HOW TO LEARN

For life-long learners, there are two issues:

- finding the information;
- assimilating it (or putting it somewhere where we can find it in a hurry).

There has been a revolution in adult learning methods in the past decade or two. Those of us involved with undergraduate teaching will have come across many of the themes:

- Student-centred, self-directed learning
- Superficial and depth learning
- Small group work on problem solving
- Mentors to keep you on the right track

The lecture is a pretty hopeless way of conveying useful information for retention. Variants, like case-presentations, may score more highly on relevance to clinical practice, but being largely passive for the listener, they are not a good way of learning. Conferences have their place, especially if you are taking part, and for the breadth of coverage that a large meeting can give. But do not expect to retain much of what you hear. Going to conferences and listening to lectures is, however, how most of us get most of our CME.

Superficial learning is what we do before exams, and most of the knowledge temporarily gained goes

the way of the anatomy and biochemistry we once knew. In-depth learning is what we are after. We acquire this by:

- defining a problem;
- seeking information;
- using it—by writing it into a paper, research proposal or book chapter, applying it to a clinical case, or presenting it to our colleagues.

One of the justifications for clinicians being involved with research is that it keeps them expert in their field. You will educate yourself best by giving CME rather than by receiving it. The ‘educational prescription’ is a variant on this—when seeing patients, write down a question to which you do not know the answer, on diagnosis, treatment, or prognosis, and later answer it using the best available evidence.<sup>1</sup>

It is not good practice to delegate every time it is your turn to do a departmental presentation, and if you do (as you should, since similar skills must be passed on to junior staff) then supervision should be active, not passive. When you have to present, choose a topic that is going to teach you something. Make it interesting—every talk is a performance. Taking part in SHO-directed teaching sessions is also a good demonstration of commitment. MRCP teaching is another good way of maintaining, and sometimes expanding, your knowledge.

## FINDING INFORMATION

David Sackett, guru of the evidence-based medicine movement, suggests there are three ways of acquiring information, only one of which is a good way<sup>2</sup>:

- Induction—remembering what worked before
- Deduction—looking for the best available evidence
- Seduction—asking someone, a colleague, an expert, or a drug rep.

Information varies both in its intrinsic quality, and changes with time, as new ideas emerge and new research is done. Part of keeping up to date must involve scanning one or more general journals, and corresponding specialist journals. You will miss things. You may not see something, you will see it

and not get round to reading it, or it will appear somewhere you have not looked. This means that at other times you will have to search for things. Be ready to appraise things for their relevance and quality. Sackett’s books on evidence-based medicine<sup>1</sup> or clinical epidemiology<sup>2</sup> are particularly good if you need help on these.

Searchable databases are the future of information, and access to these is improving—libraries, websites such as the BMA or doctors.net.uk, the NHSnet and National Electronic Library for Health. You must learn how to use them if you cannot do so already. Depending on your computer skills, you will either hack around them until you get the idea, go on a course, or ask your librarian.

The internet has yet to define its true worth for medical education. Most of the information turned up with commercial search engines is rubbish. The web is the quickest and easiest way of disseminating information, however, and you ought to be familiar with it. Keep an eye out for sites which you should look at. It is the best way of finding government documents, and many journals’ websites now have full-text versions available.

Textbooks used to be first, and now find themselves last. In many ways, you are more isolated professionally as a consultant than you have ever been before. You are less pluripotent and your field of expertise can expect to narrow progressively as your career progresses. Textbooks represent comprehensiveness and solidity, and still have a place. They go out of date quickly, but they are compact (especially the CD-ROM versions).

## SUMMARY

1. Geriatrics is unique in being broader than its parent discipline, general medicine.
2. This brings special challenges in both knowing your limits, and keeping up to date.
3. Effective education aims for ‘depth’ learning (assimilation and understanding) rather than ‘superficial’ learning (fact-based).
4. Lectures are a very poor way of acquiring useful knowledge. Actively seeking and using information is far more effective (giving presentations, preparing research protocols).
5. You must be familiar with searchable electronic databases, such as Medline and the Cochrane database of systematic reviews.

6. You should be familiar with methods for appraising the quality of information.

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# 44. Making the most of information technology (IT)

**Rob Morris and Rowan H. Harwood**

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The *Oxford English Dictionary* defines information technology as:

*‘The use of processes (especially computers, microelectronics and communications) for storing, retrieving and sending information of all kinds (words, numbers, pictures etc)’.*

*‘Information is the key to the modern age. The new information age offers possibilities for the future limited only by the boundaries of our imaginations. The potential for new electronic networks is breathtaking—with prospects for change as widespread and fundamental as the agricultural and industrial revolutions of earlier eras.’*

(Tony Blair in *Our Information Age*)

Most IT is based on computers, so we must understand something about them to make the most of IT. Computer applications now strive to be user friendly so the process has become easier.

Try not to think “what can the computer do?”, rather “how can I make it do what I want it to do?”. Computers do not speak our language and only do things if they get correct instructions in the right way at the right time. They do exactly what they are told. Computers are logical, know nothing about context, and can be very unforgiving of small mistakes in what we tell them.

Many advances involve networks. Networks are electronic systems made up of computers joined together. Understanding the way data are moved around them will shed light on such issues as security and confidentiality.

**Table 1.** Useful software.

Type	Examples	What it does
Word processor	Word, WordPerfect, Word Pro	A sophisticated typewriter. Allows you to type and format text, and also integrate pictures, graphs etc.
Desktop publisher	PagePlus, MS Publisher	Produce publication quality documents, incorporating graphics. Modern word processors do much the same thing.
Spreadsheet	Excel, Lotus 1-2-3	A way of storing and manipulating data in rows and columns.
Graphics/ Presentation	PowerPoint, Harvard Graphics, Freelance	Draw graphs, diagrams, make slides and display presentations.
Database	Access, dBase, Approach	Stores data so it can be sorted and searched. Can produce formatted reports.
Statistics	SPSS, Stata, SAS, Egret	Perform all the statistical calculations you will ever need.
Reference manager	Refman, Endnote	Imports references and abstracts from Medline, stores them, is searchable, and can export them into a manuscript and reference list.

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## THE PERSONAL COMPUTER (PC)

PCs usually have ‘office’ software installed (Table 1). This provides a word processor, spreadsheet, database, communications, desktop publishing and presentation functions. With a little effort in learning the language of these applications, you will be able to produce letters, posters and teaching materials.

We would consider statistical software as essential, particularly with increasing pressure to audit and record performance. You must know your statistics before you can use the software properly (we recommend the text by Kirkwood, see Recommended Reading at the end of the chapter.).

Reference manager software is useful, if you do research or write papers. You can download references, including an abstract, from Medline; index, sort and retain those you want to keep, and then customise the citation and reference for output in a manuscript. You can keep databases, such as case registers, and use these to aid clinical management, including generating discharge summaries. You will probably need help with this (such as training your secretary, or employing a data entry clerk), as data entry is hard work. Audit, and lists of suitable patients for drug trials, are areas where clinical databases can be used.

The addition of extra devices (peripherals) can further enhance the quality and value of your work by making use of the ‘multimedia’ capabilities of your PC (Table 2). (Multimedia simply refers to different ways of presenting information, such as text, still pictures, moving pictures, sounds and animations.)

A scanner will allow you to incorporate pictures and photographs. You can use conventional photo-

graphy to take pictures, or you can photocopy graphs and diagrams from a journal or book. You then scan it into a form with which the computer can cope (‘digital’). Alternatively, you can use digital cameras which feed straight into your PC. Digital video cameras capture action sequences (for example, recording an abnormal gait) for teaching. Optical Character Recognition software (usually included with the scanner) allows you to scan text documents and import the result into a word processor for editing and storage.

The Personal Desktop Assistant (PDA, personal organiser) is a mini hand-held computer. It includes an office suite (word processing, spreadsheet and database). PDAs are designed to integrate with your desktop machine, allowing you to carry your electronic diary with you, and synchronise information added on the move with your diary on the office PC. Appointments can be added on the office PC by your secretary, and uploaded to the PDA. A PDA reminds you of appointments or other commitments (by bleeping at you), thus increasing efficiency. It can log appointments for next year (however, it must be admitted that a paper diary is quicker to use). These devices may become the way we enter clinical information into electronic patient records, using infrared linkages via receivers on the ward or in the clinic to the main hospital computers.

## COMPUTING IN THE NHS

Most hospital information systems are based upon terminals (a screen with built-in electronics and a keyboard) connected to a powerful central computer. These ‘dumb terminals’ are a generation

**Table 2.** Useful peripherals.

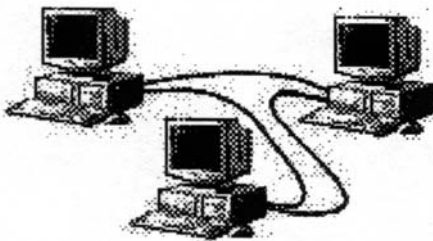
Name	What it does
Printer	Prints computer text or images onto paper
Monitor	Allows you to see what the computer is doing, and respond to it
Scanner	Converts pictures or text into a form which the computer can store and manipulate
Modem (may be built in)	Allows your computer to communicate with others via telephone lines, and thereby access to the internet
CD-ROM (usually built in)	Allows computer to read data from CDs—and play them if they are the music sort
Disk drive (built in)	Stores data to disks (1.44 MB)
Zip drive (may be built in)	Allows storage of large quantities of data (100 MB) on a special kind of disk
CD writer	Allows you to record very large quantities of data (650 MB) so that another computer can read it

behind the PC. The requirements of government policy ('Information for Health') will render these systems obsolete. Accessing patient information systems with PCs is already possible—you may already be able to get results and other data through a connection to the hospital network. Providing enough modern computer hardware, maintaining it and keeping it up to date is a challenge for the NHS.

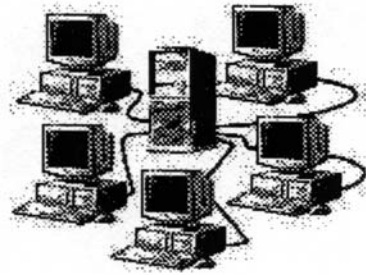
## NETWORKS

Two PCs joined by a connecting cable through which they can move information is a network. If more than two PCs are joined together it forms a bigger network. A group of people may decide to share access to information stored on any of the participating PCs (Figure 1). Security is set by choosing which bits (files, folders) of your machine you want to share.

This arrangement works for small groups wishing to share resources, but it gets difficult to manage if you join more than five PCs in this way. Security is poor, and the machines must be in the same geographical area. What if you are handling sensitive information about patients and there are concerns about confidentiality and possible loss of data? What if different individuals (for example, researchers or members of a clinical team) handle different bits of a task, but all want to store and retrieve information from a common database? The next step on the network ladder is called Client/Server Networking (Figure 2).



**Figure 1.** Peer-to-peer networking. This kind of networking might be used to connect the PCs of the members of a research group in adjacent rooms. It allows each member to access information stored on other members' PCs, assuming the owner of that PC has set permission (which can be password protected) for access to others.

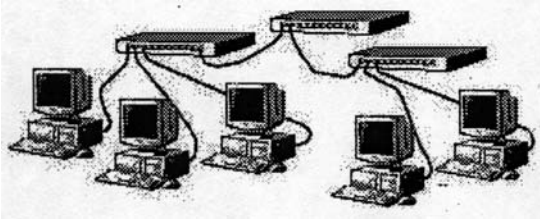


**Figure 2.** Client/server networking. A research group, a GP practice, academic department or a whole hospital might use a network like this. In larger hospital there may be several servers, which have different responsibilities, e.g. one for the Personnel Department, one for the geriatricians (!) etc. Individual users can be permitted access to some or all of the servers and some or all of the information stored on each server.

A server is the PC's big brother—it goes faster, has more memory, and built-in ways of storing information securely. Servers can often update copies of information constantly, so that, in a disaster, no data is lost. The greater power of these machines allows hundreds of users (clients) to connect their PC to the network and share information. These users can be widely dispersed around the hospital. The server can carry messages between members of the network (electronic mail or e-mail) and gives everybody an identity (e-mail address). Networks of this size require someone to look after the server and administer the network (Network Administrator). The Network Administrator can control the amount and type of information that users are allowed to see using passwords, and how much storage space each is allowed to use.

All the client PCs wishing to connect to the server require a sophisticated cable. These are systems of connection boxes (hubs) and switches (routers) joined up by telephone wires (Figure 3).

When components of the network are in roughly the same place, it is called a Local Area Network (LAN) or intranet. There are two more types of network—Wide Area Networks (WAN) and the internet. Many general practitioners network PCs within the surgery as a small intranet and have digital telephone line (called 'ISDN') connections to other members of the local health community (Trusts,



**Figure 3.** Tree topology. The arrangement of cables, hubs and routers required to run a hospital-sized network is known as Tree Topology. The inclusion of semi-intelligent boxes and switches means that when one 'box' fails, then only the PCs connected to that box are unable to access the network and the rest of the hospital can carry on working as normal.

Health Authorities, each other). This WAN allows the doctors to exchange information (patient records, fees data etc.) with each other quickly and efficiently.

## THE INTERNET

In the 1960s, academics in American universities began sharing information in exactly this way. They developed servers, which accepted incoming telephone connections from other institutions. As more universities and other organisations got involved, they developed ways of communicating and identifying each other. The resulting explosion in networking has developed into the internet. Millions of people across the globe can now participate in this dynamic worldwide network (World Wide Web, *www*).

Using software called a web browser (e.g. Netscape or Explorer) you can visit and view 'websites' on computers maintained by organisations such as the universities, BMA, BGS, Department of Health, journals, voluntary and commercial organisations. If you do this from home, you need to subscribe to an Internet Service Provider (e.g. Demon™, AOL™, Freeserve™), who connect you up to their computers using your telephone line. They also give you space to create your own website and allow you to receive e-mail. University and hospital computers allow you to connect to the internet directly without going via a Service Provider. This makes them quicker, and saves you the cost of the phone call.

E-mail allows you to send messages and computer files ('attachments') to other people rapidly and cheaply. This is useful if you have collaborators who need to agree on a protocol, edit a manuscript, swap data files and so on. Sending computer disks through the post is yesterday's way of working. Via the BMA and other sites you can search Medline, Embase and other databases. Many journals carry an on-line version, which allows you immediate access to full text or abstracts. Material from websites (e.g. a journal article) can be copied (downloaded) onto your computer.

## NHSnet

The need for information sharing in the NHS has to be balanced against the consequent issues of confidentiality and security. The NHS therefore has a separate network, not part of the World Wide Web. NHSnet is designed to be protected from the rest of the electronic world by filtering (hardware and software) devices called firewalls. These prevent inward access to NHSnet from the internet but there are secure outward connections from NHSnet to the internet. Ultimately all organisations involved in the provision of health care will be connected to each other and the internet through NHSnet.

Information technology is developing so rapidly that it is difficult for the NHS to keep up. The NHSnet may be obsolete before it is available to everyone. The e-mail system is old-fashioned and has limited capabilities. The NHS might be better off using the internet and 'secure servers' to deal with confidential information. The need for confidentiality is equally great for commercial companies, and systems have been designed to cope with this. (An example is the security needed to enable you to use your credit card safely to buy products or services on the internet.)

## VIDEOCONFERENCING AND TELEMEDICINE

A videoconference is a person-to-person or a group discussion in which participants are in different places, but can see and hear each other. Some videoconferences can take place over the internet. Otherwise they involve the use of a room at each geographic location with a special video camera and document presentation facilities. (A recent develop-

**Table 3.** Implementing Information for Health.

Date	Target
1998–2000	National NHS E-mail system to be completed NHS Direct available nationally Experimental electronic health records in selected GP practices
2000–2003	NHSnet usable for appointments, radiology and laboratory requests, results reporting and hospital discharge information All GP practices to be on NHSnet National pilot of electronic community prescribing Electronic library for health (NeLH) to be accessible on NHSnet >35% hospitals to have partial electronic patient records First-generation electronic health records to be started
2003–2005	All hospitals to have electronic patient record systems Transfer of electronic records among GPs possible Full implementation of electronic health record 24-hour emergency access to patient records

ment simulates the appearance of all participants in the same room around a table.) In general, videoconferencing requires special telephone connections with a high capacity ('wide bandwidth', usually ISDN). A simpler alternative to a videoconference is an audioconference, which has only voice connections. One could imagine this technology being used to convene a virtual case conference, enabling community nurses, social workers, or rehabilitation staff, or a GP, to take part without travelling to the hospital.

Telemedicine can be defined as:

*The use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or health care provider, and for the purpose of improving patient care.*

It includes ways of communicating patient data, voice, or images, in order to assist, augment or replace in-person clinical consultations.

Telemedicine is employed, for example, in:

- Providing or improving access to health services, especially in rural areas, on oil rigs, at Antarctic research stations etc.
- Highly specialised services, such as neuro-radiology reporting, or neurosurgical opinions, which can take place miles from the scanner by transmitting the images to a specialist centre.

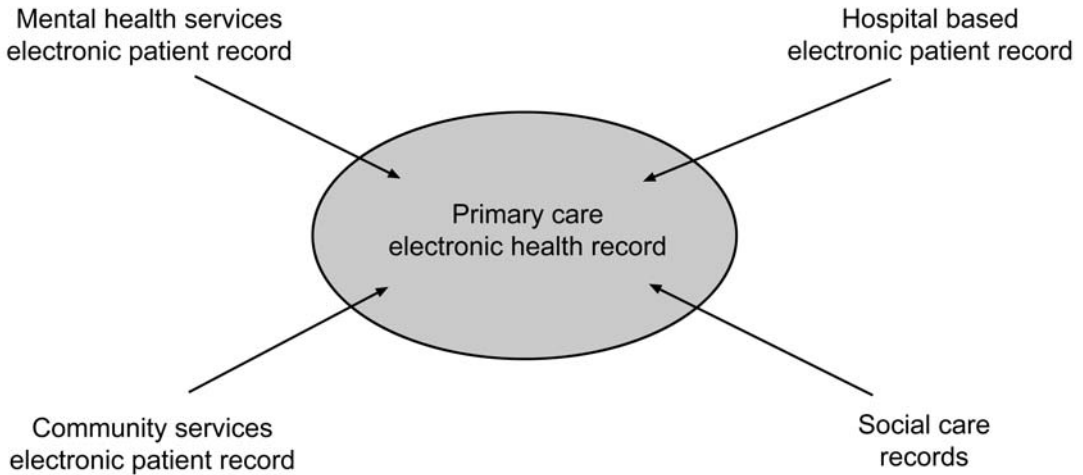
- Sending pictures of a rash or a mole from a GP to a dermatologist for an opinion.

## INFORMATION FOR HEALTH

In 1998 the government introduced a policy called *Information for Health: an information strategy for the modern NHS*. This aimed to modernise and re-direct NHS information systems. The patient is placed at the centre of a network (an expansion of NHSnet) linking all the institutions and individuals involved in the delivery of health care. The emphasis is on making information work for patients and staff. NHSnet was developed to support the NHS internal market, as a means of keeping activity information as accurate and up to date as possible. Consequently, many of the systems were not designed to meet the needs of the new strategy. The government wants results quickly—its timetable outlines some of the developments involved (Table 3).

## ELECTRONIC HEALTH RECORDS (EHR) AND ELECTRONIC PATIENT RECORDS (EPR)

- An Electronic Patient Record is an electronic version of the information held in paper casenotes.



**Figure 4.** The relationship between the Electronic Health Record and Electronic Patient records.

- The Electronic Health Record is a longitudinal record of patients' health and healthcare — from cradle to grave. It combines information from patient contacts with primary care as well as information collected during episodes of hospital care held in the EPRs (an electronic discharge summary or clinic letter).

Some of this is merely a faster and better postal service, for getting information from one place to another. There are advantages for doctors in using EPRs and the EHR. The lack of availability of patient information is often a hindrance to decision-making. Instantaneous access to a centralised EPR could eliminate such problems. Instead of wading through piles of paper and multiple sets of notes, the EPR will allow us to search and view the information we need in the most appropriate way. You will also be able to view more information, such as X-rays, CT/MRI images, ECGs and blood test results.

Eventually, EPR software will permit graphical representation of information, giving a new slant on the way we interpret the results of tests (e.g. a graph of creatinine against time, or trends in blood count results for patients on immunosuppressive drugs). The EPR will incorporate data from the EHR (e.g. changes that a GP has made to a drug list), and the two systems will be constantly updated. This longitudinal picture across the levels of care may be

unfamiliar, but should hopefully help us to look after patients more effectively and efficiently.

It is already more efficient for patients' administrative details and pathology results to be held and accessed by computer. There is little extra effort involved in adding clinic letters and discharge summaries to this, creating an embryonic electronic patient record. Besides this, most hospital computer systems record a vast amount of data; but most of it remains unanalysed and unused. If you want information on how many patients you saw last year, trends in lengths of stay, or differences between wards, ask what your information department can come up with. What you find may enable you to change the way data are collected to make it more useful in future.

Recording plain text is an inefficient way of storing data. It is better to define 'fields' or 'headings', which contain a limited choice of responses. Examples include diabetes registers, where a case-register forms the main clinical record, including diagnostic history, complications, co-morbidities, treatments, and annual review data.

New systems will incorporate simple mouse-click links to clinical protocols, guidelines and other information sources in the National electronic Library for Health (NeLH). As we develop services, we will be able to review the latest local Health Improvement Programme (HiMP) strategies, and evidence from the National Institute for Clinical Excellence (NICE).

Through e-mail, voice mail and text messaging we will be able to communicate rapidly with colleagues (physiotherapy, occupational therapy, speech therapy, and dietetics).

The possibilities seem exciting, but what about the disadvantages?

- The electronic infrastructure to support the EHR does not yet exist.
- The quality of other people's data will be uncertain.
- We will have to get used to a new dictionary of clinical terms and codes.
- Extra demands on our time using the new equipment and information.
- Time required inputting data.
- Training for those without IT skills.
- Increased accessibility—wading through 100 irrelevant e-mails at the start of your day may not be the best use of your time.
- Increases in expectations because of greater public access to health information through the internet and NHS Direct—knock-on increase in consulting time.
- Individual-level performance figures will be feasible, and it may not be politically acceptable to keep them from the public. Are we ready for this? And will we teach people about statistical variation, casemix and learning curves?
- Confidentiality and security—the new information systems must be watertight to gain the confidence of the public and healthcare professionals.

## MANAGEMENT INFORMATION

Clinical governance makes it the responsibility of Chief Executives to ensure that quality of clinical services is adequate. They are not going to do this alone, but will ensure there are systems in place to monitor quality.

We can expect 'benchmarked' comparisons of length of stay, mortality and complication rates. Interpretation will be difficult—these will be uncontrolled, or inadequately controlled comparisons, with alternative explanations for differences between individual clinicians. It is important that clinicians take an interest in the process early in its development to make sure that what is produced is clinically sensible. Epidemiological and statistical skills will be at a premium.

## THE NATIONAL ELECTRONIC LIBRARY FOR HEALTH (NeLH)

The aim of the NeLH is to provide easy access to best current knowledge to improve health and healthcare, patient choice and clinical practice. From the users' perspective it will appear as a virtual library composed and browsed like a website. The 'librarians', a panel of clinicians, will only put 'quality' (selected and reviewed) information on the 'shelves'. This will include the Cochrane Database of Systematic Reviews and electronic versions of textbooks. Some academic and commercial services providing similar information are already appearing (such as the Oxford-based 'Evidence-Based On Call'). There will be access to electronic databases like Medline or Embase. The architecture will also include sections on know-how (guidelines and audit), knowledge (best current evidence) and NHS Direct Online (information for patients). Users will be able to set their own preferences and, as a result, receive pertinent updates on subjects of interest as they appear. Access to the resources will be through the desktop PC and NHSnet.

## THE DATA PROTECTION ACT (1998)

This was implemented in 2000 and replaces the 1984 Data Protection Act. The 1984 Act did not cover manual records (e.g. case notes, research data records), whereas the new Act does. The legislation frequently uses the term "data processing"—obtaining, recording or holding the information or data or carrying out any operation or set of operations on the information. The term "personal data" is also used. This may take many forms, from complex disease-specific databases to a simple patient identification label. The Act is intended to be all-encompassing.

The Data Protection Act is based around eight guiding principles and defines certain rights and freedoms for individuals (referred to as 'data subjects' in the Act).

1. *"Personal data shall be processed fairly and lawfully and, in particular shall not be processed unless [certain specific conditions are met]"* (for example, that you have been given express permission to use it).

The Act requires that we respect and protect the confidentiality of information obtained from patients. Basic information must be given to patients on who will do what with the data. The common law of confidentiality must be complied with, so informed consent should be obtained for any use. There are circumstances where the information is of such importance that this issue becomes subject to ‘the overriding public interest’ (for example, someone with epilepsy who will not stop driving). Furthermore, ‘common law’ is an evolving body of case law and is open to judicial interpretation. Fortunately, the Department of Health guidance is that the principle of confidentiality should not be construed in ways which disadvantage patients. Also, ‘NHS activities are in the public interest and that where patients have been effectively informed of the intended uses of the information and do not object, their consent can be implied’. Clearly, explicit consent is preferable where practicable.

2. *“Personal data shall be obtained only for one or more specified and lawful purposes, and shall not be further processed in any manner incompatible with that purpose or purposes.”*

This means that data recorded for one purpose cannot be used for some other purpose without the consent of the person involved. In exceptional circumstances, this rule may be relaxed if the ‘other purpose’ is in the overriding public interest. This provision had the potential to forbid much research, published case series, epidemiological monitoring, cancer registries, contracting and audit—and commercial applications like the use of prescription data for marketing by pharmaceutical companies. Fortunately, there is already case law (the ‘Source Informatics’ case) establishing that anonymised, aggregated data (such as clinical case series for publication, or prescribing data) may be lawfully used for these additional purposes.

3. *“Personal data shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they are processed”*
4. *“Personal data shall be accurate and, where necessary, kept up to date.”*

(‘data are inaccurate if they are incorrect or misleading as to any matter of fact’.)

5. *“Personal data processed for purpose(s) shall not be kept for longer than is necessary for that purpose or those purposes.”*
6. *“Personal data shall be processed in accordance with the rights of data subjects under this Act.”*

We must guard against any use of information which may cause unnecessary distress to the people to whom it refers. Examples would be refusing to give subjects access to the information, going against subjects expressed wishes not to have their personal data used for specific purposes and using personal data for the purposes of direct marketing.

7. *“Appropriate technical and organisational measures shall be taken against unauthorised or unlawful processing of personal data and against accidental loss or destruction of, or damage to, personal data.”*

At first sight this is aimed at the managers and technical people, but what about notes left in your unlocked office or car boot?

8. *“Personal data shall not be transferred to a country or territory outside the European Economic Area (EEA), unless that country or territory ensures an adequate level of protection for the rights of data subjects in relation to the processing of personal data.”*

This places limits on sharing personal data with colleagues in countries outside the EEA without the consent of the person involved. A minor point, but one of the reasons why there are standard protocols for international trial design and data collection.

In addition to these eight ‘Principles’, the Data Protection Act gives seven rights to individuals in respect of their own personal data held by others. They are:

- Right of access to data
- Right to prevent processing likely to cause damage or distress
- Right to prevent processing for the purposes of direct marketing
- Rights in relation to automated decision taking (anything generated without it passing through human hands, and of relevance to life insurance enquiries, credit rating and the like)

- Right to take action for compensation if the individual suffers damage
- Right to take action to rectify, block, erase or destroy inaccurate data
- Right to make a request to the Data Protection Commissioner for an assessment to be made as to whether any provision of the Act has been contravened

The new Data Protection Act supersedes the Access to Health Records Act (1990) in all respects except those relating to information about the deceased. In the terms of the Data Protection Act (1998), people will have access to all records irrespective of when they were created.

## SUMMARY

1. Doctors must be computer literate.
2. Computers can make life easier for us.
3. As a minimum, you should be familiar with word-processing, presentation software, searchable electronic databases and the internet.
4. The NHS is investing in modernising information technology and communications systems, so expect a period of rapid change.
5. Respect the confidential personal data you access and make sure that you comply with the principles of the Data Protection Act.

### Learning Tasks

- Get a PC — you can become PC-literate in about 40 hours.
- Master an unfamiliar application every month and become an IT master in a year.
- Find out who is responsible for implementation of 'Information for Health' in your Trust and ask about the Local Implementation Strategy—they may welcome your approach, as they find it difficult to get clinicians involved.
- Think carefully about any 'personal data' you already have guardianship of and deal with it according to the principles of the Data Protection Act.
- Keep an eye on the 'Information in Practice' section of the *BMJ*.

## RECOMMENDED READING

### A. Internet resources

1. The Data Protection Act 1998

The full text of the Act can be found at the following address:

<http://www.hmso.gov.uk/acts/acts1998/19980029.htm>

Documents published by the Office of the Data Protection Registrar:

The Data Protection Act 1998: An Introduction  
<http://www.dataprotection.gov.uk/eurotalk.htm>

The Guidelines: The Data Protection Act 1984, Fourth Series, September 1997

<http://www.dataprotection.gov.uk/dpr/guide.htm>

2. Information for Health: An Information Strategy for the modern NHS

<http://www.nhsia.nhs.uk/strategy/full/>

Other websites providing related information:

- HMSO: <http://www.hmso.gov.uk>
- Home Office: <http://www.homeoffice.gov.uk>
- NHS Executive: <http://www.doh.gov.uk/nhs.htm>
- DoH circulars: <http://www.doh.gov.uk/coinh.htm>

### B. Specific publications can be requested from the following organisations:

#### Office of the Data Protection Registrar:

Office of the Data Protection Registrar

Wycliffe House

Water Lane

Wilmslow

Cheshire SK9 5AF

Tel: 01625 545700

Fax: 01625 524510

E-mail: [data@wycliffe.demon.co.uk](mailto:data@wycliffe.demon.co.uk)

Web-site: <http://www.dataprotection.gov.uk>



## NHS Information Authority

Security & Data Protection Programme  
 15 Frederick Road  
 Edgbaston  
 Birmingham B15 1JD  
 Tel: 0121 335 4422 (Help Desk)  
 Fax: 0121 625 1999  
 Website: <http://www.standards.nhsia.nhs.uk>

## NHS Executive (Caldicott guardians and confidentiality)

The Confidentiality Issues Section  
 Information Policy Unit  
 NHS Executive Headquarters  
 Room 1N35B  
 Quarry House  
 Quarry Hill  
 Leeds LS2 7UE  
 Tel: 0113 254 6093  
 Fax: 0113 254 7372  
 Website (Caldicott):  
<http://www.doh.gov.uk/confiden/index.htm>

## C. Other useful sources of information/reading:

- Wyatt, J. and Keen, J. (1998) The NHS's new information strategy. *BMJ*, **317**: 900.
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# 45. Professional issues: How to be a good teacher

Nick Coni

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This is not the place for a treatise on the theory of education, nor even its practice. Virtually all doctors will be called upon from time to time to teach, yet few receive any training how to do it. The formality of the setting will vary from the house officer demonstrating a skill such as venepuncture to a few students, to a GP giving a talk to a First Aid class, to a professor giving a Royal College lecture. In theory at least, the formal lecture to students is dead, and all teaching should be ‘interactive’. The other dinosaur which stubbornly refuses to become extinct is the mixed business plus teaching ward round—there is general agreement that the two activities cannot be satisfactorily combined.

Teaching is one of the many human activities in which there are no good criteria by which a person’s ability can be measured. Medical students are often in agreement as to which of their teachers are ‘good’ or ‘bad’, but often confuse this judgement with whose sessions they find fun or boring. But perhaps stimulation does equate with good teaching.

## **RULE 1**

*“The function of the teacher is not to give out information but to inspire the student to do the work”.*

Despite the clamour by students for handouts for every seminar, the current emphasis is on medicine as a university education and not as a body of factual knowledge to be absorbed prior to its practical application as a house officer. Future students will therefore enjoy much greater latitude in which subjects they concentrate on, and in how much depth they research them. Perhaps the pendulum has swung

too far in this direction, but any fifty-plus-year-old doctor will testify that everything s/he learned as a student has since been superseded or rubbished.

## **RULE 2**

This follows from rule 1. Teaching should be interactive — draw the students out, so they supply the answer from their own knowledge or intelligence. This is only possible in small group situations.

## **RULE 3**

Never ridicule anyone in a teaching group, except in a kindly way. As a consultant, I was never able to fathom out why students expressed (anonymously, to the dean) a strong preference for being taught by a consultant, over being delegated to a registrar. One eventually explained to me. “It’s the art of gentle bullying — you make us realise we actually know more than we thought, but Dr X” (the registrar) “makes us realise we know less than we thought.”

## **RULE 4**

Allow your enthusiasm for your subject to show through. If the teacher is not enthused, the students certainly will not be.

## **RULE 5**

Rule 5 is for the set-piece lecture, or, for that matter, for presenting a paper. Do not start off in the manner

typical of medical speakers. “Chairman, ladies and gentlemen”, they begin, and then swing round with their back to the audience and facing the screen, “may I have the first slide, please.” (usually followed by signs of total surprise, as though the slide is completely unfamiliar to them). Eye contact is essential, so use prompting notes; do not read from a script, or you will sound like somebody reading from a script.

**RULE 6**

Finally, a popular teacher may not necessarily be the same as a good teacher—but it probably feels better!

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# How to cope with stress

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Medicine can be a stressful, if rewarding occupation. The condition we call stress is not sufficiently well defined to permit accurate epidemiological data, but there is fair agreement about its causes, its features, and about some of the strategies which can help people to cope with it.

Stress of one kind or another persists throughout a medical career, but some kinds stay the same and others change. The main sources of stress are as follows:

- Trainees:
- Working excessive hours
  - Curtailment of social life, loss of friends
  - Deaths, grieving relatives
  - Being summoned to an emergency (or a triviality) whilst in the middle of another task
  - Irritability of other staff
  - Increasing responsibility, even if diminishing self-doubt
  - Combining career with family/social life
  - Career pressures—higher examinations, the next job, grand rounds, the need to publish
  - Need to impress consultants

- Consultants:
- Combining medicine with family/social life
  - Establishing/maintaining reputation—publishing, committees etc.
  - Accepting too many roles so that you fulfil them all less well than you would wish
  - Complaints
  - Conflicts with colleagues, managers and others
  - Need to keep up to date
  - Need/wish to impress patients, relatives, GPs, juniors, nurses, colleagues
  - Grand rounds, giving papers and lectures
  - Clinical governance

## COPING STRATEGIES

Different causes, different solutions, but a few general principles can be suggested:

1. Seek help—you are surrounded by people happy to give it, including nurses and other trainees.
2. At all stages of your career—make a conscious effort, when you walk out of the hospital entrance, to forget the place until you walk (or are called!) back in again: it will still be there.
3. If your bleeper keeps summoning you to different wards and departments, you have to set priorities. You cannot be in several places at once.
4. Consultants—try not to agree to take on so many tasks that you finish up doing none of them very well.
5. Try not to become ratty.
6. It is a big mistake to have recourse to alcohol or drugs. When off duty, music or some arduous exercise or a hobby is better for you.
7. Nobody thanks you for neglecting to take all the annual leave to which you are entitled.
8. A final thought: surely some degree of stress is not only unavoidable, but positively beneficial. Some people thrive on it, and most of us perform better when lecturing or teaching if not totally 'laid back'.

As can be appreciated, stress is a lifelong companion throughout a medical career. We all learn to live with it, a few even enjoy it, or feel that it is necessary in order to achieve peak performance. In this respect, medicine is no different from a number of other demanding professions. We like to think that the stakes are higher, but they are pretty high for airline pilots and generals too.

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# How to be an effective leader

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There is increasing emphasis in medicine on interdisciplinary teamwork, and a team generally requires a leader. It is normal for the leader of the clinical team to be a consultant, because s/he has undergone the longest and most rigorous training, is probably the most experienced member of the team, is likely to be the most permanent member of the team, and carries the ultimate legal responsibility for the patient. S/he also has the wider perspective of the bed situation and the pressures of demand—an onerous perspective shared by the registrar but not by the ward nursing and paramedical staff.

Consultants may have to show leadership qualities in other contexts too. They may become whole-time managers, as medical directors or chief executives, or as part-time clinical directors. They may be called upon to chair meetings or organise conferences. They may find themselves directing services. Whether leadership can be taught is a question best left to officer-cadet schools, but there are a few general rules which may help.

## **RULE 1**

The leader generally expects that if there are different viewpoints, his or hers will prevail. In a hospital, this will only happen if you listen to the other views with respect and show that you value them. Unlike the military world, it is not sufficient simply to give orders.

## **RULE 2**

A leader expects loyalty from the rest of the team. This is very much a two-way process, and s/he must in turn show loyalty to the others, and spring to their defence if necessary. A consultant is fortunate in having, as junior colleagues, a group of highly intelligent, highly motivated young people. S/he is

also fortunate in the close relationship, often over many years, s/he may enjoy with nursing staff, who are also extremely hard-working and committed to their patients.

## **RULE 3**

The consultant who shows genuine concern for the welfare of the patients will command respect.

## **RULE 4**

Consultants who try to bluff their way out of situations beyond their competence will lose respect. A public admission of failure is far more impressive than repeatedly trumpeting one's successes.

## **RULE 5**

Consultants who set a bad example will forfeit respect. This may take the form of poor timekeeping, or excessive devotion to private practice or golf, or discourtesy to patients, relatives, or staff.

## **RULE 6**

Sir John Harvey Jones, in his book *Making it Happen*, defines the qualities necessary for leadership as imagination, courage and sensitivity. He is describing the features of good management, and agrees that perhaps a good manager has to be decisive—but it helps if their decisions are the right ones.

The points listed above may stimulate some thought: it has to be admitted, however, that the subject of leadership is far from being evidence-based, a characteristic which it shares with most human attributes.

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# How to get the most out of meetings

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Meetings that doctors attend fall into two categories—committee meetings, to try to make decisions about organisational matters, and academic meetings which vary from small departmental journal clubs to major international conferences.

Business meetings are what managers do all day, and have been described as ‘meetings, bloody meetings’. If they are large, and you are not (in management speak) a ‘key player’, it is only too easy to get nothing out of them—unless you learn how to knit and emerge with a new pair of socks. It is important, however, for the trainee to attend a number of them, partly so that s/he can develop a feel for how organisational decisions are arrived at, partly so that s/he will be able to answer questions about that sort of thing at job interviews. Ideally, at some stage, the registrar should hold office in a committee in order to achieve a degree of management credibility on the CV.

When attending committee meetings as an observer, it is possible to avoid the apparently inevitable death by boredom, by using one’s critical faculties. Does the committee fulfil any useful function, other than providing diversional therapy for ageing consultants? If you were elected chairman, would your first action be to dissolve it? Would you try to make it more effectual, and if so, how? Sometimes, the *status quo* has to be grudgingly accepted, even if the committee seems to be just a talking shop with no real executive function. For example, the former regional specialty advisory committee in geriatric medicine is discussing, in its usual paranoid way, the recurring theme of ageism in medicine. Dr Y, from Little Bumstead General, complains that his patients are being denied life-saving cancer treatment. After much nodding of greying heads, it is concluded that Dr Y is absolutely right, and the chairman is instructed to write to the clinical director of the Regional Cancer Centre. The recently appointed Dr Z supports this suggestion, and points out that the Daily Loco has been running a

campaign along these lines, and is keen to receive further ammunition. Might the chairman mention this in the letter, in such a way as to imply that Dr Y’s information might be grist to the Loco mill? Unedifying, venal, informative, possibly effective—a lesson to be stored for future recall.

As far as small departmental academic meetings are concerned, if you are not getting much out of them, do not just stop going. Use your initiative to change them, thereby ensuring both that you do get something out of them, and that you get noticed by the consultants (always an item on your personal agenda). You will probably be volunteered to take over the organisation of them, which is not actually a bad outcome, although a chore at the time.

What about conferences? It will become increasingly important, during the career of a registrar, that s/he attends certain conferences in the chosen specialty. Having done so, it is perfectly possible to return to base only to be asked “What’s new? What did you learn, then?”—and to feel like replying “Nothing, it was a complete waste of time”. Here, then, are some suggestions for making sure that you get *something* out of a conference, even if you do not learn anything very specific new.

1. Give a paper or show a poster. It *may* be published, you *may* get noticed, and anyway it is a rite of passage and good practice. You will meet fellow speakers and get to know them. Your consultant should help you with the preparation of your paper or poster.
2. Get a feel for what the ‘movers and shakers’ are thinking and talking about.
3. You *may* even hear a paper that impresses you, or stimulates an idea for a research project.
4. “It’s not what you know but who you know”, so get to meet your contemporaries, and the heavies. Professor X may not give you such a hard time in the interview if you and he and a number of others got paralytic in the red light district of

- Barcelona a few weeks beforehand. He may, of course, give you a much harder time, particularly if you were ill-advised enough to disagree with his views on molybdenum metabolism, and even more unforgiveably, if you were right.
5. Listen to the tittle-tattle—what jobs are coming up, which are the good departments, and what is the general state of health of your chosen specialty.
  6. At the very least, enjoy your time in Barcelona.

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# 46. Research and audit

Nick Balcombe and Alan J. Sinclair

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## INTRODUCTION

Without research, many medical advances would not have been possible and current medical practice might still be limited to the use of leeches! Geriatricians may feel that their primary role is clinical care and that research is unnecessary, if not distracting. This view is misplaced and with the growing health needs of our ageing population, the impetus for research into age-related disorders and disabilities should be encouraged, especially by those in clinical geriatrics.

Successful research requires hard work, determination and often a desire to answer a specific question prompted by everyday medical practice. Everyone has the potential to be a competent researcher and the aim of this chapter is to provide a simple guide to the research process, from the initial planning through to the satisfaction of seeing your name in print.

Experience in research is a mandatory requirement for geriatricians in training. Although this does not necessitate personal involvement in a research project, self-directed research will provide enjoyment, increase your ability to criticise research publications constructively and allow you to evaluate the importance of research evidence.

## HOW TO SET UP A RESEARCH PROJECT

### Choose your Topic

If you are having difficulties, reflect on clinical problems you encounter, go to conferences, listen to experts and keep up to date with medical journals. Ideas may emerge spontaneously after discussion with colleagues, both clinical and research.

### Review the Literature

Explore the subject in depth to identify the gaps in knowledge and ensure that your ideas have not been followed by others already. Too many projects are 'me too' studies which waste time and effort. Use the Medline and Cochrane databases to search for articles and employ the skills of librarians to help you with this. We suggest starting with Medline, which allows you to find specific papers and authors or to perform wide-ranging searches to provide general information or answer specific research questions. The Cochrane database consists of systematic reviews and randomised controlled trials produced by the Cochrane collaboration and the NHS Centre for Reviews and Dissemination.

### Formulate a Hypothesis

A hypothesis is the research question you aim to answer. It should be clear and concise. A vague hypothesis is indicative of a muddled mind and this will lead to a hazy conclusion that is unlikely to advance medical knowledge.

### Prepare a Protocol

This should be prepared according to set standards:

#### *Introduction (why you are doing this study)*

Briefly introduce the area of research you are undertaking and give the background to the nature of the problem. Explain what is already known and what are the gaps in knowledge. End with a clear statement of the aim of your proposed study.



*Method (what you did)*

This should detail how you are going to answer the hypothesis. Describe the study design (i.e. randomised, case controlled, cohort, prospective, retrospective), the subjects you are going to use and how you are going to recruit them. Describe also which patients you are going to exclude, the measurements you are going to perform and when you are going to do them. Describe what outcomes you are going to measure and when.

*Duration of study*

Describe how long the study is expected to last both for individual patients and the study as a whole.

*Statistical support*

Describe what statistical support will be available to help you analyse the results.

*Funding*

Explain where funding for the study (if needed) will come from.

*Power calculation*

This will help determine the number of patients you need to recruit to answer your hypothesis.

**Obtain Ethical Approval**

This will be required if you are planning a study that involves patient contact or the collection of patient data and will require the submission of the protocol, along with patient information sheets, consent forms, data proforma and any questionnaires that you will be using. It usually takes 2–3 months to obtain ethical approval after application, as the local ethics committee may send your proposal back to you with several enquiries which need to be answered before full approval is given.

**APPLYING FOR A GRANT**

The competition for research money is becoming increasingly intense and the aim of this section is to

provide a basic introduction to preparing grant applications, the types of grant available and where to apply. All funding bodies have their own guidelines for the preparation of grant applications but all will require the following information.

**Title of Project**

First impressions are always important and so this is a vital part of the application. It should be short and clear and introduce the area of research, the research question and, in some cases, the study design. Try to be precise and avoid general terms (e.g. “a case control study” or “a randomised controlled trial of” is much more informative than “a study of”).

**Summary**

This provides a map of the whole application and should explain why the research is needed and the main aim of the project. It should provide brief details of the methodology (study design, nature and number of subjects and a broad description of the data to be collected) and describe the outcome measures and what implications the results may have.

**Background**

Give the scientific background to the research and include a review of the current state of knowledge and highlight the gaps in knowledge.

**Aims**

Give a clear and concise statement of what you intend to discover. Avoid being over-ambitious and limit the number of aims to a maximum of 3 or 4.

**Study Design**

Include:

- The setting for the study
- Details of the study subjects, including numbers (supported by a power calculation) and recruitment methods

- Exclusion criteria
- Details of interventions to be performed
- Details of the data to be collected, including what, how and when
- Details of outcome measures
- Details of statistical methods that will be used to analyse data
- A time plan for the project (including the time it will take to recruit subjects, collect, analyse and present data)
- Feasibility of the project (is there the necessary equipment and expertise, can the appropriate numbers of patients be recruited).

### **Beneficiaries**

Who will benefit from your proposed research? This may be patients with particular conditions or the NHS as a whole. Explain how your results will improve not only our knowledge but also directly make an impact on the way patients are cared for. It is also important to explain how generalisable your results will be.

### **Budget Details and Justification of Budget**

This section needs to explain fully what costs are going to be incurred and why. If the research requires additional staff, it is important to justify their salary by describing their exact role in the project. Consideration also needs to be given to pay rises, national insurance and superannuation contributions. Other aspects to be considered include equipment, travel costs, the need to employ a statistician or health economist, and how much will be required for consumables such as stationery, photocopying, postage, computer equipment and software. Be precise in your estimates of cost, as this shows that you have considered your research carefully.

### **Dissemination**

Give brief details of how you intend to inform people of your findings, i.e. journal publication, poster presentation, platform presentation (locally or nationally).

### **Curriculum Vitae**

This should be presented in a fashion that demonstrates you and your co-workers have the required experience and expertise to carry out the proposed project.

### **Ethical Approval**

The formal letter of approval from the ethical committee should be included in the grant application.

### **Types of grant**

#### *Project grants*

This is the most common type of grant. It will fund all aspects of the project, including the salary of the researcher.

#### *Programme grants*

These are substantial awards given to support a series of related research questions. Few of these grants are awarded and they are only given to researchers of international reputation.

#### *Fellowships*

These are personal awards made to cover salary and associated research costs. They are given for a duration of 1–4 years. The main requirement of these fellowships is that the fellow must be part of an appropriate training programme. Training fellowships are usually based in university departments.

### **Useful contact addresses**

Medical Research Council  
20 Park Crescent  
London  
W1N 4AL  
Tel: 0207 636 5422  
Internet: <http://www.mrc.ac.uk/MRC>

Wellcome Trust  
 Grants Section  
 183 Euston Road  
 London  
 NW1 2BE  
 Tel: 0207 611 888  
 Internet: <http://www.wellcome.ac.uk>

The Stroke Association  
 Stroke House  
 Whitecross Street  
 London  
 EC1V 8JJ  
 Tel: 0207 566 0300

Association of Medical Research Charities  
 29–35 Farringdon Road  
 London  
 EC1M 3JB  
 Internet: <http://www.amrc.org.uk>

British Geriatrics Society  
 1 St Andrews Place  
 Regents Park  
 London  
 NW1 4LB  
 Tel : 0207 935 4004

Research into Ageing  
 Baird House  
 15/17 St Cross Street  
 London  
 EC1N 8UN  
 Tel: 0207 404 6878

## STATISTICAL ANALYSIS

*“The difficulties many intelligent people have with ‘sums’ are infinite”*

(Greenwood, 1948)

Medical statistics is, for most people, a difficult area to comprehend and yet, it is a vital part of the research process. Most research projects can be competently analysed using a small number of basic tests. To determine which tests to use and how to present the results, talk to colleagues who have done research and look at the journals and, in particular, at papers which relate to yours. This section aims to give a basic overview of the types of tests that are commonly used.

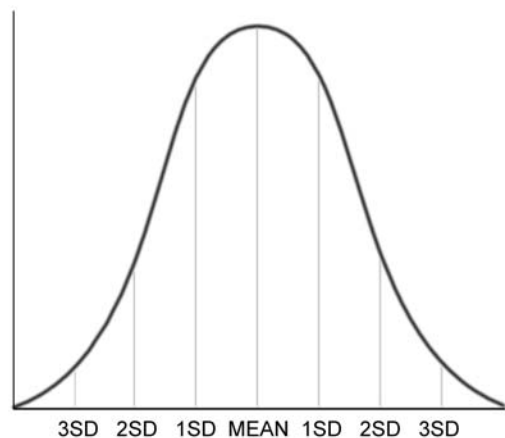
## Variability of Data

This can be simply described using frequency charts or histograms and will convey whether data is normally distributed. Quantification of variability can be achieved using descriptive statistics (mean, median, standard deviation, centiles, interquartile range, variance, confidence intervals). Whenever you quote a mean value, always quote the standard deviation and whenever you quote a median, always quote the interquartile range.

## Comparing Groups of Data

We may want to compare sets of data between different groups or within individuals over time. For data that is normally distributed, parametric tests should be used (e.g. paired t tests, ANOVA), but for data that are not normally distributed, non-parametric tests should be used (e.g. Mann Whitney test, Chi squared).

### *The normal distribution*



In a normal distribution, the mean, median and mode are equal.

One standard deviation from the mean includes 68% of the observations.

Two standard deviations from the mean include 95% of the observations.

Three standard deviations from the mean include 99.7% of the observations.

## Relationship Between Sets of Data

This can be described using correlation and regression. Correlation provides a numerical value of the relationship and ranges from +1 (perfect positive correlation) to -1 (perfect negative correlation). Regression provides a more detailed description of the relationship and enables a prediction to be made of the amount of change to be expected in one variable (dependent variable) as a result of changes in the other variable (independent variable).

## DISSEMINATION OF RESULTS

### Writing for a Medical Journal

Different journals have different styles and requirements to which you will need to adhere. Read the “information for contributors” details and do not be shy in discussing your paper with the Editor. In this section the aim is to provide basic hints on preparing papers for submission that may improve your chances of success. Submit your paper to a journal which has a good reputation and readership which will be most interested in your study.

### Case Reports

These fall into three sections: the reason for publication, the actual case report, and an explanation of the importance of the report. Around 600 words is the usual guideline on length and the case report itself should be the main focus of the article. It should be sufficiently detailed to allow the reader to feel confident that the correct diagnoses were reached or the right treatments given. Concentrate on positive findings and important negative findings. Do not try to build up the case as being indicative of a major medical breakthrough as case reports are considered as lowly sources of evidence.

### Clinical Trial Reports

The preparation of these should follow the IMRAD (Introduction, Methods, Results and Discussion) design:

*Introduction and Method (Why you did the study and what you did)*

These sections should be prepared as per the protocol.

*Results (What you found)*

Focus on the main aim of the project and present the data that are germane to this. Do not give any interpretation of the results at this stage.

*Discussion (What it means and where from here)*

This section should be formally structured:

- Begin with a clear statement of the principal findings.
- State the strengths and weaknesses of your study. Whilst criticising your own study may not be particularly enjoyable, it is essential to maintain the trust of the reader.
- Relate your findings to previous work and explain any similarities or differences in results.
- Then give the implications of your findings. Do not attempt to claim too much. Let the reader decide how important the results are.
- Finally, discuss the remaining unanswered questions and say what further work is needed.

*Abstract*

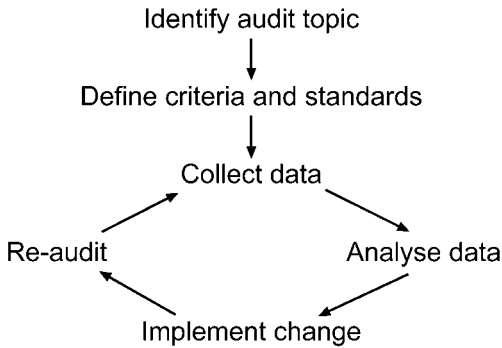
Your final task is to prepare the first section of your paper. A good abstract should present a clear synopsis of the main features of your paper, including the reason for the study, the aim of the study, the study design, the major findings and the importance of the results.

## CLINICAL AUDIT

*“The purpose of audit should be educational and relevant to patient care”*

(Royal College of Physicians, 1989)

Research leads to the advancement of medical knowledge which has the potential to enhance standards of care. Clinical audit monitors the implementation of such advances. Many definitions of clinical audit exist, but one of the more recent definitions is:



**Figure 1.** The audit cycle.

*“systematic critical analysis of the quality of clinical care, including procedures used for diagnoses and treatment, the use of resources and the resulting outcome and quality of life for the patient”.*

To perform a successful audit cycle, a systematic approach must be pursued, as illustrated in Figure 1.

Factors contributing to audit failure include confusion with research, not setting standards, lack of interest from senior colleagues and failure to identify important and relevant topics. Audit projects require background reading, preparation and planning, cooperation of colleagues in the team and often assistance from audit staff.

Several approaches to clinical audit should be encouraged and these include:

- *Sentinel case audit*  
Examines variations from the norm in terms of outcome.  
Examples include: review of deaths, medical disasters, clinical incidents.
- *Random case note review*  
Examines standards of note keeping and quality of administrative documentation.  
Also highlights interesting aspects of patient management.
- *Criterion-based review*  
Examines departures from specified criteria.
- *Outcome review*  
Examples include length of hospital stay, discharge destination.

- *Patient satisfaction*  
Aim to improve service delivery and ‘customer’ satisfaction.

Review of published clinical guidelines is one method of ensuring that audit activity maintains educational value.

In the future, clinical audit will underpin initiatives such as clinical effectiveness and clinical governance.

## RECOMMENDED READING

- Altman, D.G. (1997) *Practical statistics for medical research*. Chapman & Hall.\*\*\*
- Blaxter, L., Hughes, C. and Tight, M. (1997) *How to research*. Open University Press.\*
- Crombie, I.K. and du V. Florey, C. (1998) *The pocket guide to grant applications*. BMJ Publishing Group.\*\*\*
- Dickinson, E. and Sinclair, A.J. (1998) Clinical Audit of Health Care. In: Pathy, M.S.J. (ed), *Principles and Practice of Geriatric Medicine*, John Wiley & Sons, Chichester.\*\*

## SELF-ASSESSMENT QUESTIONS

1. The following are essential in the preparation of a research protocol:
  - a. Medline database search
  - b. A detailed series of aims
  - c. Patient information sheets
  - d. Power calculation
2. Clinical audit:
  - a. Is intended to effect change in medical practice
  - b. Cannot be performed where no guidelines exist
  - c. Can be used to examine treatments but not investigations
  - d. Does not require collaboration
3. In statistics:
  - a. The variance is the square root of the standard deviation
  - b. The Chi squared test is a parametric test
  - c. A correlation coefficient of 0.1 indicates a good relationship
  - d. The interquartile range is the difference between the 25th and 75th centiles

**PART FIVE**

**BIBLIOGRAPHY**



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# 47. A specialist bibliography in elderly medicine

Maurice Cohen and Sara Gerrie

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## CARDIOVASCULAR SYSTEM

### Ischaemic Heart Disease

Rich, M. (1996) Therapy for acute myocardial infarction. *Clinics in Geriatric Medicine*, **12**(1): 141–167.

This review summarises the evidence for the current pharmacological regimens for the treatment of an acute myocardial infarction in elderly patients. Thrombolytic therapy, aspirin, beta-blockers and angiotensin converting agents all reduce mortality and the latter three have been shown to reduce morbidity as well. Thrombolytic therapy in particular has been shown in several large randomised prospective trials to have a greater reduction in mortality in elderly patients than the young. This is likely to be a reflection of the fact that mortality of the untreated individual rises with age. This evidence, however, is tempered by numerous studies which show that the elderly are less likely to receive thrombolytic therapy.

This review also looks at the evidence for therapies which are not routinely used, such as heparin, nitrates, antiarrhythmic agents, magnesium and calcium antagonists. As elderly patients are more at risk of complications, there is also a section on the management of congestive cardiac failure, hypotension, arrhythmias, cardiac rupture and cardiogenic shock. However, there are no differences in treating these complications in elderly patients. This paper ends with a short but helpful look at some of the ethical considerations.

Duprez, D.A. (1996) Angina in the elderly. *European Heart Journal*, **17**, suppl F, 8–13.

This article looks at the specific difficulties in

diagnosis and management of elderly people with ischaemic heart disease. It has a helpful section on the problem and solution of diagnosis in a population with multiple pathology and who are unable to exercise sufficiently. Risk factor modification is stressed and the evidence for this in an elderly population is reviewed. The particular difficulties encountered with polypharmacy are also addressed. It is pointed out that age is not a contraindication to surgical intervention (coronary artery bypass graft or coronary angioplasty) but that this is reserved for those in whom medical therapy fails to control symptoms and decision is to be made on a basis of need and co-morbidity rather than age.

### Heart failure

Rich, M. (1999) Heart failure. Cardiovascular disease in the elderly. *Cardiology Clinics*, **17**(1): Feb.

This article reviews the epidemiology, pathophysiology, clinical features and treatment of heart failure in older patients. The epidemiology section points out how ischaemic heart disease, hypertension and valvular disease in elderly patients are likely to result in an epidemic of heart failure. In fact hospitalisation costs in the USA exceed those for myocardial infarction and cancer combined. The importance of diastolic heart failure affecting as much as 50% of the over-80s but only 10% of the under-65s should also not be underestimated. There is a good section on the current knowledge of the treatment of diastolic heart failure, which suffers from a lack of large-scale controlled trials.



A recent overview of the ACE inhibitor trials show that the ACE inhibitors are at least as effective in elderly as in younger patients. Despite the fact that potential benefits greatly outweigh the potential adverse effects, ACE inhibitors are still greatly underused in the elderly population and the doses used too small. Digoxin use in all ages reduces hospitalisations and improves quality of life. Diuretics are the cornerstone of symptomatic relief of pulmonary congestion. However, older patients are more susceptible to electrolyte disturbance. The use of beta-blockers remains controversial as very few over-75s were included in the Carvedilol study. The last section of this paper looks in detail at the non-pharmacological aspects of care (including the benefits of exercise) and stresses the benefits of a multidisciplinary approach, which reduces hospital admissions, improves quality of life and decreases overall cost of care.

Cohn, J. (1996) The management of chronic heart failure. *NEJM*, **15**, Aug., 490–497.

A good general overview of heart failure management in all ages divided into sections on symptom relief and prolonging life. It also has a section on common pitfalls in management.

### Postural Hypotension

Johnson, R. (1992) Orthostatic hypotension in elderly people. *Oxford Textbook of Geriatric Medicine*. ISBN: 0-1926-1590-4.

This excellent chapter starts by looking at the pathophysiology of blood pressure control in the normal elderly person. It then reviews the disorders in which it is disturbed and the link with autonomic failure. An exhaustive review of all possible therapies finishes this chapter.

### Valvular Heart Disease

Cheitlin, M. (1999) *Valve Disease in the Octogenarian. Cardiovascular Disease in the Octogenarian and Beyond*. Martin Dunitz Ltd.

The management of valve disease in elderly patients is, generally speaking, no different to the

younger adult. However, surgery for tight aortic stenosis should always be considered in appropriate individuals irrespective of age, because untreated, mortality approaches 50%, and a treated individual with an aortic valve replacement will have the same life expectancy as age matched controls.

### *Guidelines for the Investigation and Management of Adults with Valvular Heart Disease*

This consensus document gives useful guidelines for the investigation and management of valvular disorders in all ages.

### Peripheral Vascular Disease

Golledge, J. (1997) Lower limb arterial disease. *Lancet*, **350**, 1459–1465.

A good overview although not specifically aimed at elderly patients, it is still useful as it is clearly a disease of the older population. Included are sections on epidemiology, investigation and treatment. There is also a review of the current understanding and management of critical limb ischaemia.

### Cardiac Arrhythmias

Van Gelder, I. (1997) Pharmacological management of arrhythmias in the elderly. *Drugs and Aging*, Aug., **11**(2), 96–110.

Cardiac arrhythmias occur more frequently with advancing age. Many therapeutic options are available to treat supraventricular and ventricular tachycardias. This review focuses on the use of antiarrhythmic drugs in elderly patients. In addition, the value of non-pharmacological interventions, such as radiofrequency ablation and implantable defibrillator, is highlighted.

Bennett, D. (1997) *Cardiac arrhythmias*. Butterworth Heineman. ISBN: 0-7506-3369-7.

An excellent and relatively easy to read book, with all you need to know. It is not elderly specific, but the principles are unchanged.

## GASTROINTESTINAL SYSTEM

### Peptic Ulcer and Related Disorders

Lazzaroni, M. (1996) Treatment of peptic ulcer disease in the elderly. *Drugs and Aging*, Oct., **9**(4), 251–261.

The available data from controlled trials show that clinical efficacy and safety of short- and long-term antisecretory therapy for peptic ulcer disease are similar in elderly and younger patients.

### Gastrointestinal Malignancies

Lichtman, S. (1997) Gastrointestinal cancer in the elderly. *Clinics in Geriatric Medicine*, **13**(2), May.

This article reviews oesophageal, gastric, pancreatic, liver, gall bladder, biliary tree, colonic and anal cancers individually. It stresses the importance of careful planning of treatment, taking into account cure versus palliation, the patient's wishes, renal/liver/cardiac function and hospital attendance and ease of transport. The lack of clinical trials in older subjects is emphasised; however, there is clear benefit of adjuvant chemotherapy in the treatment of Dukes B2 and C colorectal carcinoma and anal cancer. Mostly these treatments are not too toxic and are well tolerated. Adjuvant therapy for the other malignancies has not been shown to be of benefit at any age.

### Gastrointestinal Motility Disorders

Kamm, M. and Lennard-Jones, J. (eds) (1994) *Constipation*, Wrightson. ISBN 1-871816-24-6

This book looks at constipation in detail. It has a chapter at the end on 'constipation in the elderly' which focuses on immobility, polypharmacy and pathology as the underlying cause. Treatment is no different to the younger adult, but where possible, changes to diet should be encouraged, rather than drugs which can have their own side effect profile.

### Liver Disease

Varanasi, R., Varanasi, S. and Howell, C. (1999) Liver diseases. *Clinics in Geriatric Medicine*, **15**(3), August, 559–570.

Although there are no liver diseases specific to elderly patients, this good review looks at some of the differences in clinical presentation and natural history in the elderly population. The first section on anatomy and pathophysiology notes a decrease in liver volume with age, but this does not result in a worsening of liver function tests, hence the need to investigate abnormalities in liver function tests whatever the age. This paper looks specifically at drug-induced, alcoholic, infectious, autoimmune, neoplastic and ischaemic liver diseases.

Affronti, J. (1999) Biliary disease in the elderly patient. *Clinics in Geriatric Medicine*, **15**(3), August, 571–.

Biliary disease is very common in elderly people, accounting for 20% of abdominal surgery in the over-80s. Despite this, there is little published work in this area. This article looks at the effects of age on the biliary tree and finishes with a short section on biliary malignancy.

### Pseudo-obstruction

Management of acute colonic pseudo-obstruction. *New England Journal of Medicine*, **341**(3), 192–193, 1999.

Also called Ogilvie's Syndrome, and defined as marked dilation of the colon in the absence of mechanical obstruction. Causes are medical (electrolyte disturbance, drugs or infection) or surgical (trauma or recent surgery) and where possible these should be treated and managed conservatively.

Intervention with colonoscopy is only needed when the diameter of the colon exceeds 12 cm to reduce the risk of perforation.

Kamm, M. and Lennard-Jones, J. (eds) (1994) *Constipation*, Wrightson. ISBN 1-871816-24-6, Chapters 30–32.

### Malabsorption

Hossain, J. (1998) Malabsorption in the elderly Parts 1 and 2. *Hospital Medicine*, Apr., **59**(4), 277–280 and **59**(5), 404–407.

The investigation of an elderly patient does not differ from the young and this article is a good review of the tests available and the differential diagnosis. The take-home message is that a high index of suspicion is needed as the older patient rarely presents classically with pale stools and diarrhoea.

### Coeliac Disease

Beaumont, D. (1998) Coeliac disease in old age. *Age and Ageing*, **27**, 535–538.

Iron deficiency anaemia, bone pain, and weight loss are common features of adult coeliac disease in elderly patients. Anti-endomysial antibody is a reliable and accurate screening test with a specificity of 99% (negative and positive predictive value of 100%) and obviates the need for endoscopy. Therapy with gluten-free diet is efficacious but needs persistence because of the difficulties in changing eating habits at advanced age.

### Inflammatory Bowel Disease

Akerkar, G. (1997) Inflammatory bowel disease in the elderly. *Drugs and Aging*, Mar, **10**(3), 199–208.

It has become increasingly apparent that Inflammatory Bowel Disease affects elderly patients, with new onset of disease occurring into the 7th and 8th decades. The diagnosis may be difficult as it can be confused with infectious, ischaemic and drug-related processes as well as diverticulitis and malignancy. Medical therapy is the same in elderly patients but attention must be given to co-morbid illness. This article primarily concentrates on the therapies available, which do not differ with age.

## BONE AND LOCOMOTOR SYSTEM

### Osteoarthritis

Ling, S. and Bathon, J. (1998) Osteoarthritis in older adults. *Journal of American Geriatric Society*, **46**, 216–225.

This review highlights the clinical and pathophysiologic features of osteoarthritis of peripheral joints and discusses the current and future management options for this common and disabling disease. Also included is a review of the search for a disease-specific marker to aid diagnosis. The section on pathophysiology is detailed and highlights how advances in our understanding of the disease process can be used in future therapies.

Creamer, P., Flores, R. and Hochberg, M. (1998) Management of osteoarthritis in older adults. *Clinics in Geriatric Medicine*, **14**(3), Aug., 435–454.

This article reviews the evidence in detail for non-pharmacological therapy in addition to discussing the use of medications in elderly subjects and their potential risk–benefit ratio.

### Rheumatoid Arthritis

Lea Sewell, K. (1998) Rheumatoid arthritis in older adults. *Clinics in Geriatric Medicine*, **14**(3), Aug., 475–494.

This paper concentrates on the differences between ‘standard’ rheumatoid arthritis and elderly onset rheumatoid arthritis (EORA) (see Table 1). It emphasises a multidisciplinary approach and the importance of patient education. In addition, the section on drug therapy analyses in detail the adverse effects in the elderly population of NSAIDs, methotrexate and corticosteroids.

### c) Metabolic Bone Disease

Bouillon, R., Carmeliet, G. and Boonen, S. (1997) Ageing and calcium metabolism. *Balliere's Clinical Endocrinology and Metabolism*, **11**(2), July, 341–365.

This article looks at the changes in the metabolism of calcium and vitamin D in the elderly. Intake of calcium and vitamin D, exposure to sunlight, cutaneous production of vitamin D<sub>3</sub>, renal production of 1,25-dihydroxyvitamin D, intestinal absorption of calcium, and the ability to adapt to a low calcium diet are all reduced with age. As a

**Table 1.** The differences between 'standard' RA and elderly onset RA.

Factor	'Standard' RA	Elderly onset RA
Age of onset	30–50	>60
Joint number	Polyarticular (>6)	Oligoarticular (2–6)
Joint site	Small distal	Large proximal shoulders, wrists/knees
Morning stiffness	1–2 hours	3–4 hours
Onset arthritis	Gradual >6 weeks	Abrupt onset
ESR	Normal–increased	Significantly raised
Rheumatoid Factor	Seropositive	Seronegative
Rheumatoid nodules	Present if seropositive	Rare
Sicca symptoms	None in majority	Reported in >50%

result, secondary hyperparathyroidism may occur and contribute to age-dependent osteoporosis.

Hamdy, R. (1994) Paget's disease of the bone. *Clinics in Geriatric Medicine*, **10**(4), November, 719–735.

This review article, although not recent, provides a good overview of the aetiology, pathology, clinical picture and treatment of Paget's disease in elderly patients.

### Connective Tissue Disease in Old Age

Mishra, N. and Kammer, G. (1998) Clinical expression of autoimmune disease in older adults. *Clinics in Geriatric Medicine*, **14**(3), 515–542.

This article reviews recent information about the epidemiology, clinical presentation, laboratory findings and prognosis in older adults, with new onset systemic lupus erythematosus, primary Sjogren's, and inflammatory myopathies. It is pointed out that 25% of subjects with poly/

dermatomyositis have or will be found to have an internal malignancy (8.5% for all ages), hence the need to screen in an older population.

### Gout and Pseudo-gout

Agudelo, C. and Wise, C. (1998) Crystal-associated arthritis. *Clinics in Geriatric Medicine*, **14**(3), Aug., 495–513.

This paper reviews the clinical presentation, diagnosis and management of gout and pseudogout (see Table 2). The importance of gaining a microscopic diagnosis is stressed, as is the need to consider each aspect of therapy separately (the acute attack, short-term and long-term prophylaxis).

### Polymyalgia Rheumatica/Giant Cell Arteritis

Evans, J. and Hunder, G. (1998) Polymyalgia rheumatica and giant cell arteritis. *Clinics in Geriatric Medicine*, **14**(3), Aug., 455–473.

**Table 2.** Features of typical and later onset gout.

Feature	Typical Gout	Later Onset Gout
Age of onset	Peak mid-40s	Over-65s
Sex distribution	Males >>> females	Males = females
Presentation	Acute monoarthritis lower extremity	Polyarticular onset > common. Upper extremity predominates
Tophi	After years of attacks elbows > fingers	May occur early or without attacks Seen in fingers
Associated features	Obesity, hyperlipidaemia, hypertension, alcohol	Renal failure, diuretic use

This is a systematic review of the current understanding of these related conditions, including their diagnosis and treatment. There is a section on alternative markers of disease activity, including c-reactive protein and interleukin 6. Throughout, the need for formal diagnosis with temporal artery biopsy in giant cell arteritis is stressed. This article also points out that the increased risk of thoracic aortic aneurysm and rupture in giant cell arteritis is often missed despite a 17 times greater incidence than the general population.

## HAEMATOLOGY

### Management and Investigation of Anaemia

Murphy, P. and Hutchinson, R. (1994) Identification and treatment of anaemia in older patients. *Drugs and Aging*, **4**(2), 113–127.

A readable review and good revision.

### Lympho- and Myelo Proliferative Disorders

Extermann, M. (1997) Acute leukaemia in the elderly. *Clinics in Geriatric Medicine*, **13**(2), May, 227–244.

This article addresses the epidemiology of acute leukaemia in elderly patients, and the fact that most cases of adults with leukaemia occur in the over-60s. It then goes on to look at the biological features, clinical presentation, prognosis, and treatment of acute myeloid leukaemia and acute lymphocytic leukaemia. The paper concludes with a review of quality of life, comorbidity and nutritional issues in elderly patients. A recent study of 67, 60–80-year-olds with acute myeloid leukaemia showed an improvement in a quality of life index, throughout the treatment period, irrespective of therapeutic response. This gives a strong rationale for encouraging chemotherapy in elderly patients with acute myeloid leukaemia. No evidence exists for acute lymphocytic leukaemia.

Rai, K. (1997) Chronic lymphocytic leukaemia in the elderly population. *Clinics in Geriatric Medicine*, **13**(2), May, 245–249.

This short and succinct paper reviews the diagnosis and staging of chronic lymphocytic leukaemia and

has a useful section on the adverse effects of treatment in an elderly population with co-morbid illness.

Goldman, J. (1994) Management of chronic myeloid leukaemia. *Blood Reviews*, **8**, 21–29.

Although not elderly specific, this paper reviews the treatment options.

Tura, S. (1993) The management of elderly patients with myeloproliferative disorders. *Haematol-oncol.*, **2**, suppl 1, 39–41.

A short overview concentrating purely on treatment issues in elderly patients with chronic myeloid leukaemia, polycythaemia rubra vera, essential thrombocythaemia and myelofibrosis.

### Multiple Myeloma

Zulian, G., Babare, R. and Zagone, V. (1998) Multiple myeloma. *Critical Reviews in Oncology/Haematology*, **27**, 165–167.

This paper looks at the incidence of multiple myeloma and monoclonal gammopathy of uncertain significance in all ages and finds an incidence of 50/100000 in multiple myeloma and as high as 15% of monoclonal gammopathy of uncertain significance in over-90s in nursing homes. The rest of the paper looks at supportive therapy and definitive treatment, keeping in mind the limitations in an elderly population.

## DRUG TREATMENT

### Pharmacokinetic and Pharmacodynamic Principles

George, C. *Drug therapy in old age*. Wiley. ISBN 0-471-94149-2

This excellent book is a must for all libraries where there is a Geriatric department. It comprehensively reviews pharmacokinetics and pharmacodynamics and how they are affected by age. There are then over 30 chapters looking at disease systems, the drugs used, and what different effects these can

have in elderly patients. This book also addresses compliance issues and adverse drug reactions.

### **Polypharmacy**

Stewart, R. and Cooper, J. (1994) Polypharmacy in the aged. *Drugs and Aging*, **4**(6), 449–461.

Multiple drug use is common in the aged and often results in hospital admission (20%). Methods to reduce the risks of polypharmacy include patient and physician education, and regular review.

### **Alternative Therapies**

ABC Complementary Medicine. Reviews of various topics, including herbal medicine, homeopathy and manipulative therapies appear in the BMJ weekly from October 1999 (*BMJ*, **319**: 693–696). A collection of these articles is available in book form, Vickers, A.J. (2000) *ABC of Complementary Medicine*. BMJ Publishing, London.

## **CENTRAL NERVOUS SYSTEM**

### **Movement Disorders**

Camicioli, R. (1993) Movement disorders in geriatric rehabilitation. *Clin. Geriat. Med.*, **9**, 765–81.

This article looks at the diagnosis and both medical and non-medical management of movement disorders. It focuses on Parkinson's disease and the other akinetic-rigid syndromes, most notably the 'Parkinson's plus syndromes'—the syndromes of parkinsonism with additional involvement of other systems. There is also a short section on the hyperkinetic movement disorders and discussion on methods of treatment of tremor and dystonia.

Alexander, N.B. (1996) Gait disorders in older adults. *JAGS*, **44**, 434–451.

This review focuses on the evaluation and treatment of gait disorders in older adults. It looks at factors influencing gait such as age, sex, cognitive function, levels of activity, exercise and falls. There is a review of three series of patients referred for gait disorders and a discussion of the

main diagnoses made. A classification scheme for gait disorders is suggested, based on the sensorimotor level of the pathology, namely low, medium and high. There is a section on both observational and instrumented gait disorder evaluation. Finally, there is discussion of specific medical and physical therapy interventions in the management of gait disorders.

Anouti, A. and Koller, W.C. (1996) Diagnostic testing in movement disorders. *Neurologic Clinics*, **14**, 169–82.

This article reviews the tests used routinely in the investigation of movement disorders. It covers a wide variety of disorders, giving a brief description of the presenting features and then suggesting which investigations may be useful to confirm or refute the diagnosis.

The disorders covered are Parkinson's disease, Multiple System Atrophy, progressive supranuclear palsy, corticobasilar ganglionic degeneration, dystonia, myoclonus, hemifacial spasm, chorea, Huntington's disease, tremor disorders, Wilson's disease and tic disorders.

The paper concludes that the diagnosis of movement disorders is mainly clinical and suggests that when the history and clinical evaluation are typical of a certain condition, further investigation is unnecessary.

It also reports a survey of 49 movement disorder specialists to determine the routine tests they perform to evaluate a new patient but does confirm that routine haematology, biochemistry, thyroid function tests and neuroimaging are usually ordered before specialist referral.

### **Epilepsy**

Sirven, J.I. (1998) Epilepsy in order adults. *JAGS*, **46**, 1291–1301.

This is an extensive review of the epidemiology, aetiology, diagnosis (including the use of diagnostic tests) and treatment in older adults. The treatment section focuses on the newer anti-epileptic drugs. This is an American review and does focus on things from a US perspective. There is also a short section on the role of surgery and vagal nerve stimulation in the treatment of epilepsy and on the psychosocial implications of seizures.

Rowan, A.J. (1998) Reflections on the treatment of seizures in the elderly population. *Neurology*, **51**(supp. 4), S28–S33.

This short article considers the classification of seizures, their causes in older adults, the differential diagnosis and comparative features of epilepsy in the young and old. There is a section on the new anti-epileptic drugs (AED) and suggestions as to a rational approach to drug selection. The author concludes that reliable data are still needed on the use of both the standard and newer AEDs during later life.

### Vertigo

Lempert, T. (1998) Vertigo. *Curr. Opin. Neurol.*, **11**, 5–9.

This paper reviews some of the most commonly identified causes of vertigo, including psychogenic vertigo, basilar artery migraine, Ménière's disease, vestibular neuritis but focuses on benign positional vertigo (BPV). It briefly summarises the papers which support the 'canalolithiasis hypothesis' as the cause for BPV, i.e. the action of heavy particles trapped in the long arm of the posterior semi-circular canal which move when the head position is altered with respect to gravity and the resulting endolymph flow activates the hair cell receptors causing nystagmus and vertigo.

The references section highlights papers of particular interest and gives a brief summary of their findings.

Baloh, R.W. (1998) Vertigo. *Lancet*, **352**, 1841–1846.

This is a review focusing on three common presentations of vertigo: prolonged spontaneous vertigo, recurrent attacks of vertigo and positional vertigo. There are clear tables summarising aspects of the clinical history and examination between attacks, which may help with diagnosis. Treatment options are discussed and there is a clear schematic representation of testing and treatment manoeuvres (Dix-Hallpike position testing) for benign paroxysmal positional vertigo. Although this article does not specifically focus on older subjects, there is an extensive and useful further reading section at the end.

Sloane, P.D. (1996) Evaluation and management of dizziness in the older patient. *Clin. Geriatr. Med.*, **12**, 785–801.

This article comes from a series and provides a practical basis to the investigation and management of these problems.

### Neurological Signs in Old Age—Which are Important?

Pathy, M.S.J. (1998) Neurologic signs in old age. In *Brocklehurst's Textbook of Geriatric Medicine*, 5th Edition. Churchill Livingstone, 423–431.

There are few randomised, controlled data on those clinical signs which may be 'normal' in older adults, perhaps as a result of the ageing process, rather than related to specific disease processes. In this chapter, various neurological signs are explored, including paratonia, sensory changes, tendon reflexes, primitive reflexes and tremor, and evidence for their presence in healthy, older adults is explored. The author concludes that it is necessary for "us to be critically circumspect in ascribing neurological changes to age *per se*".

### RESPIRATORY SYSTEM

Chan, E.D. and Welsh, C.H. (1998) Geriatric respiratory medicine. *Chest*, **114**, 1704–1733.

This is an extensive review covering a wide range of issues in older people, including changes in pulmonary function with age, asthma, chronic obstructive pulmonary disease, pulmonary embolism, pneumonia, tuberculosis, sleep disorders and obstructive sleep apnoea and lung cancer. It focuses particularly on the situations where pathophysiology, diagnosis and treatment may be different from younger adults.

British Thoracic Society (1997) Nebulisers for the elderly. *Thorax*, **52**(supp. 2), S539–55.

These are the British Thoracic Society guidelines for nebuliser use.

Braman, S. (1996) Drug treatment of asthma in the elderly. *Drugs*, **51**, 415–423.

This article reviews the treatment of asthma, with particular emphasis on the challenges in treating older people. It focuses on the diagnosis and management strategies. It recognises that the general principles are similar to those at a younger age, but suggests that older patients have particular problems with respect to adverse drug reactions, drug interactions and compliance. There are sections on beta-2 agonists, anticholinergic drugs, methylxanthines and corticosteroids.

## GENITOURINARY

### Acute and Chronic Renal Failure

Weinstock Brown, W. and Schmitz, P.G. (1998) Acute and chronic kidney disease. *Clin. Geriatr. Med.*, **14**, 211–236.

This review focuses on all aspects of the diagnosis and treatment of renal disease. The section on acute renal failure (ARF) suggests that there is an increased incidence of acute renal failure in older adults but that this may be due to the increased incidence of co-morbid disease in combination with the 10% fall in renal function per decade after the age of 40. There are sections on the presentation, diagnosis and management of this condition but the authors inform us that the mortality exceeds 50% and may reach 75% in a surgical intensive care unit with better correlation with the associated medical condition and aetiology of ARF than with age. The diagnostic importance of nephrotic versus nephritic syndrome is suggested, with the most common syndromes associated with nephrotic range proteinuria being type II diabetes, focal segmental glomerulosclerosis, amyloidosis, minimal change nephropathy and membranous nephropathy. Nephritic syndrome is less common in the older adult but those seen most often are crescentic glomerulonephritis, systemic vasculitis and atheroembolic disease, with Henoch-Schonlein purpura, IgA nephropathy or post-infectious glomerulonephritis occurring less frequently.

The section on chronic renal failure focuses on the complications of chronic renal insufficiency and divides that into fluid, electrolyte and acid-base complications and disorders of metabolism and specific organ systems.

The article concludes with a short section on ethical issues in the care of the older patient with renal disease, although understandably there are no easy answers.

Winchester, J.F. and Rakowski, T.A. (1998) End-stage renal disease and its management in older adults. *Clin. Geriatr. Med.*, **14**, 255–266.

This article states that its aim is “to give the generalist the broadest overview of managing the elderly patient with end-stage renal disease and to suggest points where the patient may be better managed by a specialist”. The importance of the identification and treatment of reversible causes is emphasised, particularly poorly controlled hypertension and the exclusion of obstructive uropathy. The authors suggest that the process should not be viewed as being much different from the younger patient but emphasise the importance of co-morbid disease.

### Renovascular Disease

Herrera, A.H. and Davidson, R.A. (1998) Renovascular disease in older adults. *Clin. Geriatr. Med.*, **14**, 237–255.

This article reviews the causes, assessment and treatment of renovascular disease in older adults. The authors inform us that atherosclerosis is the most common cause in the ageing population but remind us that fibromuscular disease can also occur. There are sections on renal artery stenosis, thromboembolic renovascular disease and atheroembolic disease. Two tables give clinical presentations suggestive of renovascular and bilateral renovascular disease. There is also an extremely helpful table, adapted from Mann and Pickering (*Ann. Intern. Med.*, 1992, **117**, 845–853) with guidelines as to who should be investigated further either with non-invasive or invasive methods. Potential treatments are also discussed, i.e. percutaneous transluminal renal angioplasty, percutaneous renal artery stenting and surgery: the authors conclude that in low-risk patients surgical revascularisation offers more durable patency than angioplasty but that there is little evidence as yet for stenting because it has not been widely studied.



## Diseases of the Vulva and Vagina

Kvale, J.N. and Kvale, J.K. (1993) Common gynecologic problems after age 75. *Postgrad. Med.*, **93**, 263–8, 271–2.

This is a short overview focusing mainly on cancers and oestrogen deficiencies.

Lentz, S.S. and Homesley, H.D. (1998) Gynecologic problems in older women. *Clin. Geriatr. Med.*, **14**, 297–315.

This article aims to emphasise the disease processes specific to or more prevalent in an older population both benign and malignant. Important points in the history and examination are highlighted.

## ENDOCRINE SYSTEM

### Diabetes

Advances in the care of older people with diabetes. *Clin. Geriatr. Med.*, 1999, **15**(2).

This issue of the journal is dedicated to diabetes mellitus. It covers a number of facets of diabetes care, including the pathophysiology of type 2 diabetes in the older patient, the variability of prevalence, complication rates and mortality trends of diabetes between different ethnic groups, a review of ocular disease, an overview of the diagnosis and management of diabetic neuropathy, foot ulcer prevention, nutrition and obesity and the care of the nursing home resident with diabetes mellitus.

Scheen, A.J. (1997) Non-insulin-dependent Diabetes Mellitus in the elderly. *Balliere's Clin. Endocrinol. Metab.*, **11**, 389–406.

The author concludes that although the general principles of management of diabetes mellitus may be the same in older populations, there are few data on the impact of the various therapeutic modalities on mortality and morbidity and that there are still gaps in our understanding of the pathogenesis and treatment of diabetes in the older patient. It reviews the epidemiology, pathophysiology, complications and treatment of type II diabetes mellitus in the elderly.

Sinclair, A.J., Robert, I.E. and Croxson S.C.M. (1997) Mortality in older people with Diabetes Mellitus. *Diabetic Medicine*, **14**, 639–647.

This comprehensive literature review clarifies the findings of increased mortality of people with diabetes at any given age. It confirms that diabetes in later life imposes an excess mortality risk associated with a reduction in life expectancy, even in patients aged 75 years and over. It suggests that the excess risk may be as great as two fold, a similar level to that found in young type I diabetic patients. Cardiovascular disease is the major cause of premature death. It has also been found that mortality from hyperglycaemic coma increases with age, that older patients dying from hyperglycaemic coma were often not diagnosed with diabetes mellitus and that risk of dying seems to be independent of the severity of metabolic acidosis.

### Thyroid disease

Chiovat, L., Mariotti, S. and Pinchera, A. (1997) Thyroid disease in the elderly. *Bailliere's Clin. Endo. Metabol.*, **11**, 251–70.

This review considers the wide nature of thyroid disease in the elderly. The authors review the evidence that the ageing thyroid is associated with a number of morphological and functional changes and suggest that several age-related changes are independent of the non-thyroidal illness and insufficient energy intake that may confound the assessment of thyroid function such as a reduction in thyroid hormone secretion and an age-dependent decline in serum T3 concentration. There are three tables documenting drugs which may produce thyrotoxicosis or hypothyroidism, drugs that alter TFT results without producing major changes in thyroid status and drugs which influence thyroxine requirements in hypothyroid patients on replacement therapy.

There are sections on the prevalence, clinical features, diagnosis and treatment of both hyper- and hypothyroidism. There are also short notes on nodular goitre and thyroid cancer.

### Addison's Disease

Kong, M.F. and Jeffcoate, W. (1994) Eighty-six cases of Addison's disease. *Clin. Endocrinol.*, **41**, 757–761.

The authors start from the perspective that there had been no recent reviews of Addison's disease. They established 86 cases of the disease which were followed up in the Nottingham area between 1987 and 1993, with 21 new cases being identified. The calculated incidence was 5.6 per million per annum with a prevalence of 110 million, compared with previous prevalence estimates of 39–60 per million.

### Cushing's Syndrome

Newell-Price, J., Trainer, P., Besser, M. and Grossman, A. (1998) The diagnosis and differential diagnosis of Cushing's syndrome and Pseudo-Cushing's states. *Endocrine Reviews*, **19**, 647–672.

Whilst this excellent review is not primarily written about the older patient, it does extensively cover a wide range of issues, including clinical features, the biochemical diagnosis, other causes of Cushing's syndrome and imaging methods. There is a helpful figure suggesting a diagnostic approach to the differential diagnosis of Cushing's syndrome.

Berwaerts, J.J. *et al.* (1998) Corticotropin-dependent Cushing's syndrome in older people: Presentation of five cases and therapeutical use of Ketoconazole. *JAGS*, **46**, 880–884.

This paper reports clinical data from five patients over the age of 75 presenting with Cushing's syndrome from a series of 100 patients. In three patients, pituitary-dependent Cushing's disease was diagnosed, in one ectopic ACTH secretion and in the other CRH secretion. The authors suggest that pituitary-dependent Cushing's disease may occur more frequently in older patients than may be presumed. This is in accordance with previously published data.

### Pituitary Tumours

Turner, H.E. and Wass, J.A.H. (1997) Pituitary tumours in the elderly. *Bailliere's Clin. Metab.*, **11**, 407–422.

Previous studies have suggested that older adults have a higher incidence of primary brain tumours than the general population but that they are less frequently diagnosed during life. Pituitary tumours are the third commonest intracranial tumour,

contributing 10% to the total number of primary intracranial neoplasms in those aged 65 years and older. The commonest tumours are nonfunctioning microadenomas (41–72%). Other tumours are prolactinomas (4.5–53%) with craniopharyngioma, pituitary metastases and primary pituitary carcinoma occurring rarely. The changes in pituitary function with age are discussed, along with the difficulty in diagnosis of tumours in older patients. The authors suggest that visual changes are the commonest mode of presentation of a pituitary adenoma. They also suggest that selected older patients tolerate conventional treatment well and treatment should be decided individually.

### Hyponatraemia

Kumar, S. and Beri, T. (1998) Sodium. *Lancet*, **35**, 220–228.

This is one of a series of articles in an 'electrolyte quintet'. It reviews the control mechanisms for serum sodium and considers causes and management of both hyponatraemia and hypernatraemia.

Fried, L. and Palevsky, P.M. (1997) Hyponatraemia and Hypernatraemia. *Med. Clin. N. America*, **81**, 585–609.

This article does not focus on the older subjects in particular but does provide a pathophysiological approach to understanding the causes and management of hyponatraemia and hypernatraemia.

Miller, M. (1998) Hyponatraemia: Age-related risk factors and therapy decisions. *Geriatrics*, **53**, 32–48.

The author describes age-related changes in the fluid/sodium balance, a review of the epidemiology of hyponatraemia in older patients, risk factors for hyponatraemia, diseases associated with hyponatraemia and drugs associated with hyponatraemia. There is a section on the clinical evaluation of a hyponatraemic patient, with a table detailing which features in the history, examination and on laboratory testing suggest dilutional rather than depletional hyponatraemia. In conclusion there is a short segment suggesting management strategies for both acute and chronic presentations.

Miller, M. (1995) Hormonal aspects of fluid and sodium balance in the elderly. *Endocrinology Clinics of North America*, **24**, 233–253.

This article suggests that changes in the homeostatic systems are characteristic of the normal ageing process and that this increases the older person's risk of dysfunction. It focuses on the hormonal changes (particularly vasopressin) affecting fluid and sodium regulation which occur with ageing and with diseases common in the older population. A further section considers hypernatraemia, suggesting 1% of hospitalised or long-term institutionalised elderly patients are hypernatraemic with serum sodium concentrations greater than 150 mEq/L, increasing to 34% in those who developed acute illness needing hospital treatment. Hyponatraemia is discussed, suggesting that in clinically well people at home there was a 7% incidence of serum sodium concentrations less than 137 mEq/L. There are no data as to the subjects' concomitant drug therapy.

## SKIN

### Eczema

McHenry, P.M., Williams, H.C. and Bingham, E.A. (1995) Management of atopic eczema. *BMJ*, **310**, 843–847.

This is one of the BMJ's regular 'Fortnightly Review' series and takes a practical approach to management. There are useful boxes documenting the diagnostic criteria for atopic eczema, the salient points in the history and examination and indications for referral to a specialist. There are no specific recommendations for treatment of the older patient.

Friedman, P.S. (1998) Allergy and the skin. *BMJ*, **316**, 1226–1229.

This article is taken from the ABC of Allergies and discusses the prevalence, aetiology, mechanisms, differential diagnosis and management of both allergic contact eczema and atopic eczema.

### Pemphigoid/pemphigus

Nousari, H.C. and Anhalt, G.J. (1999) Pemphigus and bullous pemphigoid. *Lancet*, **354**, 67–672.

Although not specific for the older patient, the authors provide a review of the molecular mechanism of blister formation and an approach towards diagnosis and treatment.

Huilgol, S.C. and Black, M.M. (1955) Management of the immunobullous disorders I and II. *Clin. Exp. Dermatol.*, **20**, 189–201 and 283–293.

These two review articles provide an in-depth consideration of the subtypes of the disorders, patient assessment, phases of treatment, methods of monitoring disease activity, topical and systemic therapies and supportive and adjunctive therapy. Each article also has a short section describing an overview of the management of the diseases.

### Skin Cancer

Keller, K.L., Fenske, N.A. and Glass, L.F. (1997) Cancer of the skin in the older patient. *Clin. Geriatr. Med.*, **13**, 339–61.

This article focuses on the common precancers and skin cancers in the older patient.

Gordon, M.L. and Hecker, M.S. (1997) Care of the skin at midlife: diagnosis of pigmented lesions. *Geriatrics*, **52**, 56–58, 67–68.

This is a short review of the common skin cancers seen in the older person.

## IMMUNE SYSTEM AND INFECTION

### Ageing and Infectious Disease

Miller, R.A. (1996) The aging immune system: Primer and prospectus. *Science*, **273**, 70–74.

In this article the author suggests that changes in T cell function underlie much of the age-related decline in the protective immune response. It is suggested that ageing results in the replacement of virgin T cells by memory T cells. This is written from a basic science perspective.

Ben-Yehuda, A. and Weksler, M.E. (1992) Host resistance and the immune system. *Clin. Geriatr. Med.*, **8**, 701–11.

In this article, the authors review the evidence for T lymphocyte changes in function with age and suggest that there are major alterations—thymic involution leads to the appearance of anti-self reactive cells, there is an increase in suppressor activity with age and decreased helper T-cell activity affecting up to 50% of T cells in the older adult. They also suggest that there is little, if any, impairment in the function of the B lymphocyte but that there is dysregulation of auto-antibody and

monoclonal antibody production and an alteration in the balance of B-cell subsets. Antigen-presenting cells and natural killer cell subsets seem to demonstrate no striking change with age. There is no conclusive evidence regarding changes in neutrophil function with age.

The second part of the article looks at organ-specific host resistance (urinary tract, respiratory tract, GI tract and skin) and the influence of ageing on these.



---

# Answers to self-assessment questions

---

## Chapter 2

- 1.
- a) False. Elderly people are no more religious than their younger counterparts.
  - b) True. A survey by Microsoft suggested that the over-60s spend more time on computers than younger age groups.
  - c) False. About 15% of over-70s help with voluntary work.
  - d) False.

- c) F
- d) F
- e) T
- c) T
- d) F
- e) F

## Chapter 7

- 2.
- a) False. High maternal mortality rates have previously adversely affected average life expectancy for women.
  - b) True. Men generally die younger than their wives, leaving their widows to live alone.
  - c) False. Women make up about two-thirds of the over-75s, and three-quarters of the over-85s.
  - d) False.

- 1. a) T
- b) F
- c) F
- d) F
- 2. a) F
- b) F
- c) T
- d) F

## Chapter 8

- 1. a) F
- b) F
- c) T
- d) T
- 2. a) F
- b) T
- c) F
- d) F

## Chapter 3

- 1. a) T
- b) F
- c) F
- d) F
- 2. a) F
- b) F
- c) F
- d) T

## Chapter 10

- 2.
- a) False. Can be used cautiously on a prn basis.
- b) False. Lactulose is a faecal softener, and a combined softener and stimulant is required, such as Codanthramer.
- c) True
- d) False. Approximately half.
- e) False.

## Chapter 5

- 1. a) F
- b) F
- c) T
- d) T
- 2. a) F
- b) T
- c) F
- d) T

## Chapter 12

- 1. T
- 2. F
- 3. F
- 4. F

## Chapter 6

- 1. a) F
- b) F
- 2. a) F
- b) F

## Chapter 13

- 1. a) F
- b) F
- c) T
- d) T
- e) F
- 2. a) F
- b) F
- c) F
- d) F
- e) T

3. a) T
- b) F
- c) T
- d) T
- e) T

#### Chapter 14

1. F
2. F
3. T
4. T
5. T
6. F

#### Chapter 15

1. F
2. T
3. F
4. F

#### Chapter 16

1. T
2. F
3. T
4. F
5. F

#### Chapter 17

1. d, e  
A coronary heart disease risk of 1.5%/year is equivalent to a cardiovascular risk of 2.0%/year. In most Western countries there is an increase in systolic BP up to the age of 80 for both men and women, but with men having lower values over the age of 55 due to a steeper rise in post-menopausal women. With regard to diastolic BP, in men this plateaus over the age of 60 and then tends to decline. The effect of sodium restriction on blood pressure increases with age.
2. b, c  
In the major intervention trials (i.e. C+W, EWPHE, STOP-H, MRC, SHEP, Syst-Eur) total mortality has only been significantly reduced in STOP-H, where the reduction was 43%. In the others, the reductions ranged from 3–14% and were not significant. Cardiac mor-

tality was reduced from 20–38%. It was only significantly reduced in EWPHE (38% reduction). In the C+W trial, there was a non-significant 1% increase. In all the studies, apart from the MRC trial, stroke events were reduced by more than 35%. In the MRC trial, the reduction was 25% but still significant. The average reduction in SBP on treatment in these trials ranged from 12 mmHg in the SHEP trial to 23 mmHg in Syst-Eur. For the DBP it ranged from 4 mmHg in the SHEP trial to 11 mmHg in the C+W trial.

3. a, b, e  
Casual hypertension is common in elderly people and its prevalence increases with age. Casual systolic hypertension (SBP >159 mmHg on a single reading) is around 19% in men over 60 but around 40% in men over 80. The corresponding values for women are 27% and 50% respectively. Several observational studies in the very elderly suggest an inverse relationship between blood pressure and survival, i.e. worse survival in subjects with low blood pressure levels. However, low blood pressure is also a consequence of disease and probably reflects a poor general health prior to death rather than an increased risk *per se*. A meta-analysis by Gueyffier, F. *et al.*\*\* (*Lancet*, 1999; **353**, 793–796) of patients over 80 in randomised controlled trials of anti-hypertensive treatment showed a 6% relative excess of death from all causes. By 2020, the over-80s will account for around 4% of the total population in several European Countries.

#### Chapter 18

- |         |         |
|---------|---------|
| 1. a) T | 2. a) T |
| b) T    | b) F    |
| c) T    | c) T    |
| d) T    | d) F    |
| e) F    | e) T    |

#### Chapter 19

1. a) T
- b) F (half)
- c) T
- d) F (17-fold)
- e) T

2. a) T  
b) F (30%)  
c) F (rhythm control)  
d) T  
e) F (1B – not suitable)
3. a) T  
b) F  
c) F (1.8%)  
d) F (25%)  
e) F
4. a) T  
b) T  
c) T  
d) F (secondary prevention)  
e) T

*Chapter 20*

1. F
2. F
3. T
4. F
5. T

*Chapter 21*

1. False: Notifications in the elderly have plateaued or may be rising (see reference 6).
2. True: Upper-zone shadowing is reported in 55–75% of cases of pulmonary tuberculosis in European and American studies (see references 3, 13–16).
3. False: The leucocyte count is usually normal (see references 14 and 15).
4. False: Death from tuberculosis was 16% in subjects over 65 years compared to 3% under 65 years in one survey in England and Wales (see reference 20).
5. False: Although outbreaks of tuberculosis have been reported in nursing homes, figures from the United Kingdom suggest they are not otherwise at increased risk (see reference 9).
6. False: Around one-third of older people in the United Kingdom have Heaf Grade 3–4 reactions usually due to previous infection (see reference 18).

*Chapter 22*

1. Answer = False
2. Answer = b.20%
3. Answer = False (prevalence is over 40%)

4. Answer = False
5. Answer = False (This is a controversial area and is poorly studied in old age).
6. Answer = False. ADL questionnaires are superior.

*Chapter 24*

1. F
2. T
3. F
4. F

*Chapter 25*

- |         |         |
|---------|---------|
| 1. a) T | 2. a) T |
| b) T    | b) T    |
| c) F    | c) T    |
| d) F    | d) F    |
| e) T    | e) F    |
| 3. a) T | 4. a) F |
| b) F    | b) T    |
| c) F    | c) T    |
| d) T    | d) F    |
| 5. a) F | 6. a) F |
| b) F    | b) F    |
| c) F    | c) F    |
| d) T    | d) T    |
| e) F    | e) T    |

*Chapter 26*

- |         |         |
|---------|---------|
| 1. a) T | 2. a) F |
| b) F    | b) F    |
| c) F    | c) T    |
| d) F    | d) F    |
| e) F    | e) T    |

*Chapter 27*

- |         |         |
|---------|---------|
| 1. a) F | 2. a) F |
| b) F    | b) F    |
| c) F    | c) F    |
| d) T    | d) T    |
| e) T    | e) F    |

*Chapter 28*

1. F
2. T
3. F
4. F



*Chapter 30*

1. a) T                      2. a) F  
 b) F                      b) T  
 c) F                      c) F  
 d) F                      d) F

*Chapter 32*

1. a) False. Conjunctivitis is generally painless.  
 b) False. For partial sight or blind registration the sight in the better eye is considered. About 5% of people have poor vision in one eye, usually due to amblyopia.  
 c) True. Modern cataract surgery does not remove the posterior lens capsule. It may opacify months or years later.  
 d) False. Surgery is simple. Performed under local anaesthetic it can sometimes be performed in an outpatient clinic.  
 e) True. In acute glaucoma the cornea becomes hypoxic and cloudy so that the fundus is obscured.
2. a) False. Anticholinergic drugs rarely precipitate acute glaucoma. Patients with a diagnosis of acute glaucoma will almost certainly have had bilateral iridotomies and therefore are not at risk of recurrent acute glaucoma. Anticholinergic drugs do not threaten vision in chronic simple glaucoma.  
 b) True. Topical beta-antagonist therapy can be equivalent to full dose systemic therapy. In the presence of bronchospasm, unstable LVF or bradycardia, substitute alternatives to topical beta-antagonists immediately. Refer to an ophthalmologist later.  
 c) False. Cataract surgery is generally performed under local anaesthetic. So long as the patient can keep still and can lie fairly flat for half an hour, surgery can be performed.  
 d) False. Typical features are Drusen, a localised pallor due to choroidal atrophy and occasionally haemorrhage.

- e) True. Even small improvements in navigational vision and visual acuity may make a large difference to quality of life.

*Chapter 36*

1. a) F                      2. a) F  
 b) F                      b) F  
 c) T                      c) T  
 d) T                      d) F  
 e) F                      e) F
3. a) F  
 b) F  
 c) F  
 d) F  
 e) T

*Chapter 37*

1. T  
 2. T  
 3. T  
 4. T  
 5. T

*Chapter 38*

1. a, b, c and e are false. d is true.  
 2. a and e are true, b, c and d are false.

*Chapter 39*

1. a) F                      2. a) F  
 b) T                      b) F  
 c) F                      c) T  
 d) F                      d) F

*Chapter 41*

1. a, b, e  
 2. a, e

*Chapter 46*

1. T, F, T, T.  
 2. T, T, F, F.  
 3. F, F, F, T.

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