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and Elizabeth Davies-Johns

Maternity and Neonatal Care



The Essentials of Nursing

Maternity and Neonatal Care

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Foreword to the series

This is a new series of textbooks offering a fresh approach to the study of nursing—it aims to give entrants to training, and those already qualified, an opportunity both to reflect on and to develop their own studies, and to identify their own nursing values. The text covers the material currently required by those preparing for qualification as a nurse, but it should also assist qualified nurses returning to nursing, and those wishing to gain further insight into the nursing curriculum.

The authors of each book in the series are from widely differing nursing backgrounds, and, as experienced teachers of nursing or midwifery, they are well aware of the difficulties faced by nursing students searching for meaning from a mass of factual information. The nurse has to practice in the real world, and in reality nursing students need to learn to practice with confidence and understanding. The authors have therefore collaborated to illustrate this new perspective by making full use of individual nursing care plans to present the knowledge required by the nursing student in the most appropriate and relevant way. These textbooks can therefore be used in a wide variety of nursing programmes.

Nursing training and education, and the practice of nursing—as a profession and as a career—are both affected by national and international trends. The Nurses, Midwives and Health Visitors Act 1979 in the United Kingdom, the Treaty of Rome and The European Community Nursing Directives 1977, as well as the deliberations and publications of the International Council of Nurses and the World Health Organization, all make an impact upon the preparation and the practice of the nurse throughout the world.

Nursing values may not have changed over the past one hundred years, but society and both the patterns of life and of care *have* changed, and are constantly changing. It is particularly important, therefore, to restate the essentials of nursing in the light of current practice and future trends.

The focus throughout this series is on nursing models of care, and on the need for continuity of care at home and in hospital. The authors place their emphasis on the *whole* person, and nursing care studies and care plans are used to promote understanding of the clinical, social, psychological and spiritual aspects of care for the individual.

Each book introduces the various aspects of the curriculum for general nursing: the special needs of (1) those requiring acute care; (2) of the elderly; (3) of children; and (4) of the mentally ill. The text on maternity and neonatal care, written by a midwifery teacher, provides the material for nursing students and would be helpful to those undertaking preparation for further health visiting education.

The authors wish to acknowledge their gratitude for the assistance they have received from members of the Editorial Board, and from all those who have contributed to their work—patients and their relatives, student and pupil nurses, qualified nurses and colleagues—too numerous to mention by name. To all those nurse teachers who have read some of the texts, offering constructive criticism and comment from their special knowledge, we offer our grateful thanks. Lastly but by no means least, we thank Elizabeth Horne, Senior Editor of nursing books at The Macmillan Press, for her contribution to the psychology material in the text and for her perseverance and forbearance, without which the series might never have been published.

Preface

This textbook is intended to give nursing students an understanding and perspective towards their studies in maternal and neonatal care. These basic subjects are fundamental to the nurses' understanding of 'the whole woman'.

The anatomy and physiology are presented in words and pictures. Care plans illustrate, in human terms, the clinical management prescribed and evaluated by mothers and midwives.

Many clues are given and questions posed which, it is hoped, may tempt the students to follow up their studies of these fascinating subjects by reference to the reading lists that are included.

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A note on the series style

Throughout this book, in keeping with the other titles in this series, the term *nursing student* has been used to mean *both* student or pupil nurses *and* trained nurses who are undertaking post-basic training or who are keeping up to date with the recent literature. For clarity and consistency throughout the series the nurse is described as *she*; this is done without prejudice to men who are nurses or nursing students. Similarly, the patient is sometimes referred to as *he*, when the gender is not specifically mentioned.

Care plans, which are used throughout the books in this series, are indicated by a coloured corner flash to distinguish them from the rest of the text.

Fertilisation of the ovum

Conception occurs when the female ovum is fertilised by the male spermatozoa. The ideal place for this to occur is in the ampulla of the Fallopian tube, and the ideal time within a few hours of the ovum being released from the ovary, which is usually about the 14th day of a 28-day menstrual cycle.

(a) The ovum

Ova are present in the female ovaries from early foetal life. At puberty hormonal influences cause an ovum to ripen in one ovary over a period of every 5-6 days during the 28-day cycle. The ovum when released is caught up into the Fallopian tube and if not fertilised is released with the menstrual flow. The human being needs 46 *chromosomes*, which are arranged in pairs, 22 pairs of *autosomes* and one pair of sex chromosomes. These chromosomes come from both parents and carry genetic information from parents and previous generations. Every nucleated cell in the human being has 46 chromosomes. Initially the ovum has 44 chromosomes and in readiness for union with a spermatozoon, the amount of chromosome material has to be reduced. Therefore the ovum undergoes a process of reduction, and reduces the chromosomes to 23 in the nucleus.

Chromosomes are only visible in structured form during division. At other times the chemicals which make up the chromosome material are free molecules. Before fertilisation, the chromosome material combines and a change-over of information takes place. The healthiest and most dominant genes make up 23 chromosomes; the surplus material is discarded and forms a body (called a *polar body*) in the outer rim of the ovum. If and when the ovum is fertilised the ovum divides again, and another polar body is formed. This polar body is the result of normal *mitosis* of the 23 chromosomes. Thus the ovum becomes a 23-chromosome nucleated cell, with two polar bodies, which has been penetrated by a spermatozoon.

There are millions of spermatozoa ejected at coitus, but only one fertilises the ovum, because the journey to the ampulla of the Fallopian tube is hazardous, and the ovum, once fertilised by a sperm, releases enzymes which inhibit further penetration. When fertilisation occurs the chromosomes from the spermatozoon combine with the chromosomes in the ovum, and form the 23 pairs needed for a new human being. The chromosomes dictate the sex of the child, the hair and skin colour, and direct the growth of all the different tissues needed for a human being. The autosomes from the ovum and spermatozoon are arranged in pairs and are similar. The sex chromosomes are different. The spermatozoa can contain either an X or Y sex chromosome; the ovum will always contain an X. The father therefore determines the sex of the child as follows:

<i>Mother</i> Ovum		<i>Father</i> Spermatozoa
22 Autosomes + X	<i>Girl</i>	22 Autosomes + X
22 Autosomes + X	<i>Boy</i>	22 Autosomes + Y

By a process of mitosis the fertilised ovum becomes a two-celled organism called a *zygote*. Both cells are identical and have all the information required to make a human being stored in their nuclei. If the two cells separate they produce identical twins. The nutrition of the fertilised ovum is supplied by the *vitellus* or *cytoplasm* surrounding the cell. The two cells divide again and again to become a morula, i.e. a cluster of cells. The cells remain unchanged in identity and at this stage the overall size remains the same because as the energy is used up, so the size of the vitellus decreases.

Development of the embryo

The fertilised ovum, now called a zygote, passes through the Fallopian tube, aided by the muscular action of the tubes and the ciliated epithelium which lines them.

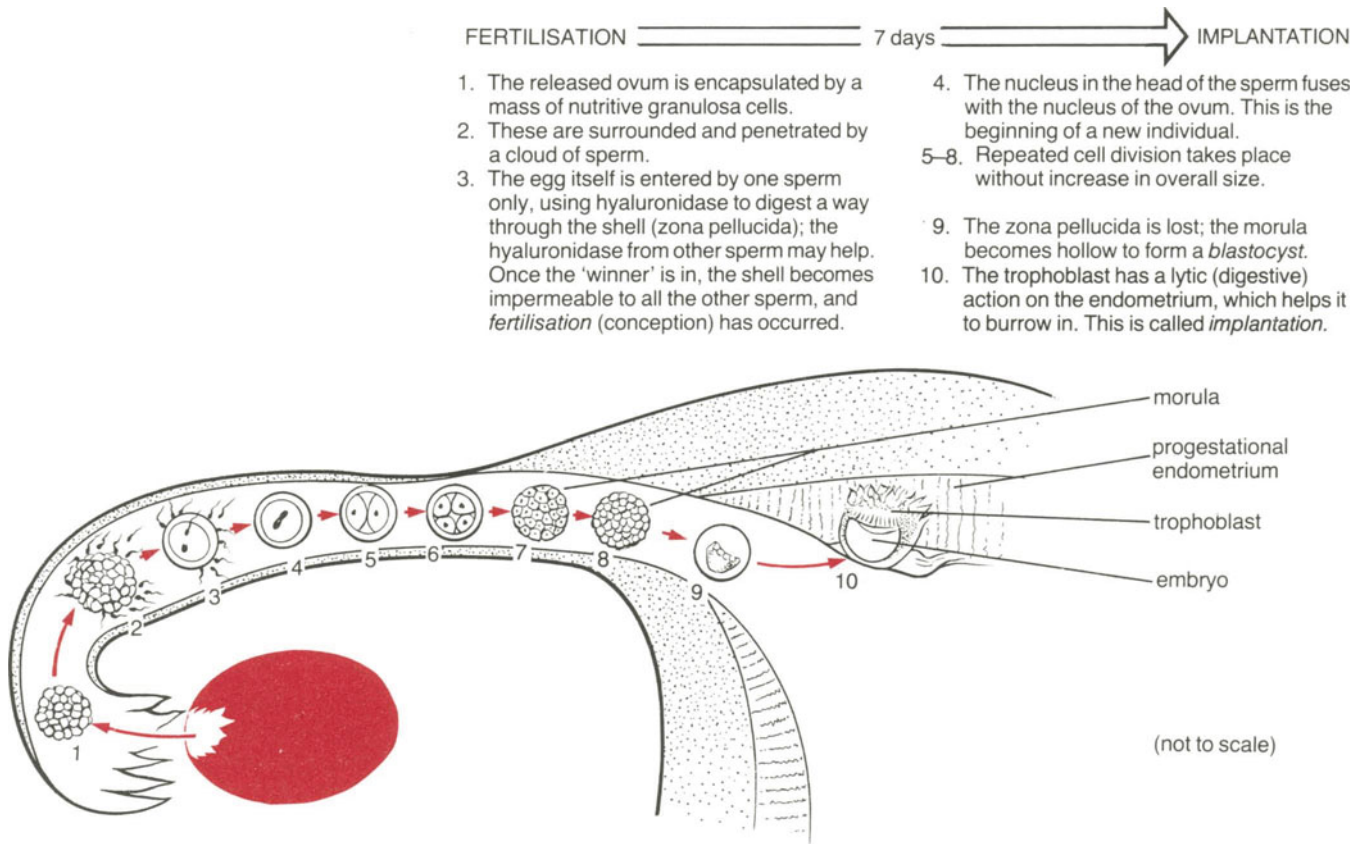


Figure 1.1 Fertilisation and implantation of the ovum

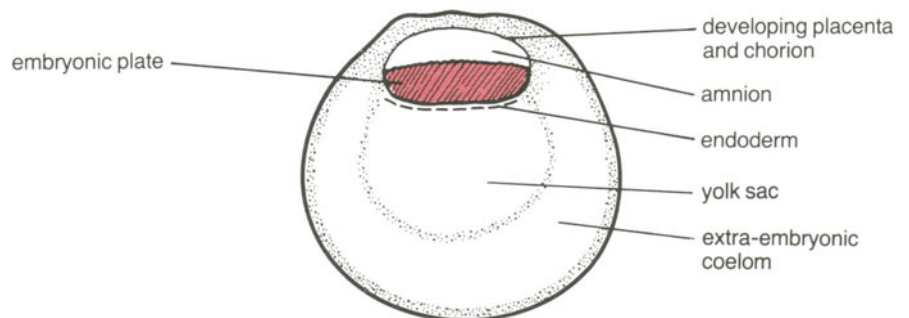


Figure 1.2 The blastocyst

During this journey the zygote develops into a *blastocyst*. The process occurs by mitosis, i.e. normal cell division. It will be noted that in the blastocyst the cells have separated into groups: an outer layer, which subsequently becomes the *placenta* and *chorion*; and an inner group of cells, which we call the *embryonic plate* (Figure 1.2). From this the embryo, the umbilical cord and the lining of the membranes (the amnion), develop. The cells in the blastocyst are identical. Each contains the same genetic information. The cells are differentiated by:

- (a) Position, i.e. outer or inner layer.
- (b) Intended function.

The growth of the embryo is extremely rapid in the first 12 weeks of pregnancy. During this period, the basic structure of the future baby is completed. At the

end of this trimester the term *foetus* is used. The foetus matures during the following 28 weeks.

Each system of the body is closely interrelated and develops, in some instances, simultaneously.

(a) The nervous system

This begins with the spinal cord, which is enclosed by vertebrae with an opening at the upper and lower end. The upper end becomes the cerebral hemispheres and cerebellum which are covered and protected by the skull (Figure 1.3).

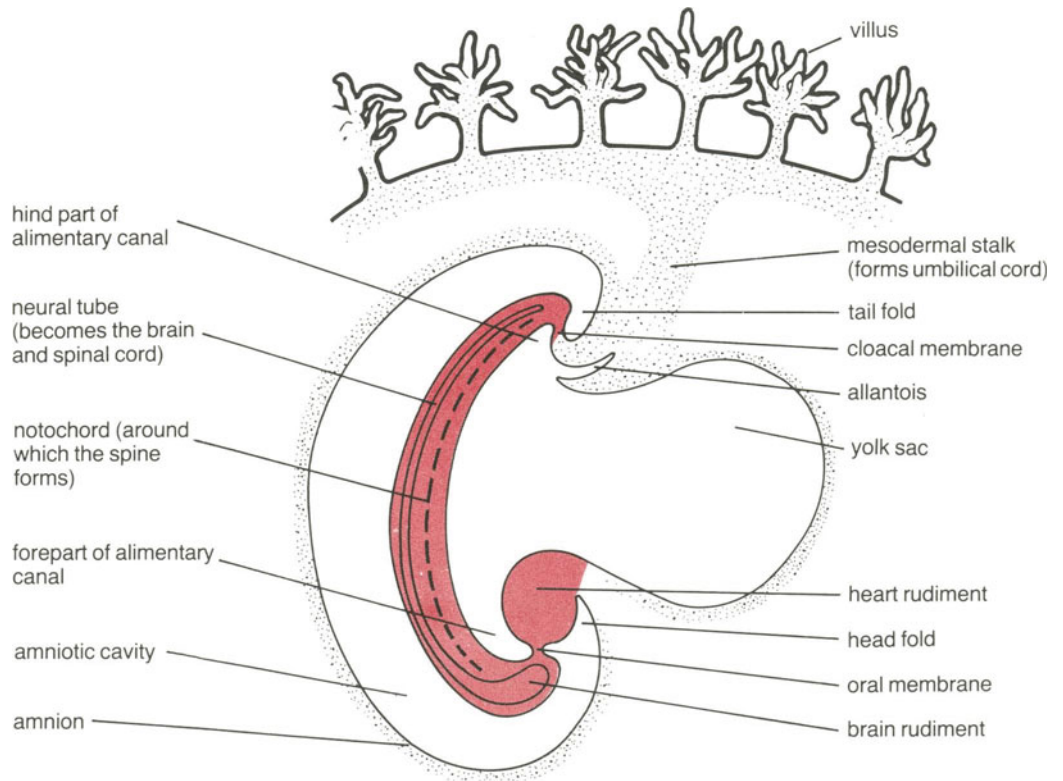


Figure 1.3 Formation of the embryo from the germinal disc

The motor, sympathetic and para-sympathetic pathways develop as each part of the body grows.

The lower end of the spinal tube closes and the nerve pathway is continued through the foramen in the pelvis.

(b) The skeletal system

This commences with the vertebral column, the ribs growing forwards and upwards to meet in the midline at the sternum.

(c) The heart

This begins as a tube carrying blood to and from the outer cells of the blastocyst. The tube rotates 180° upon itself. The upper part of the tube forms the atria, the lower part, the ventricles. The blood vessels develop as tubes to and from tissues. The tubes differentiate into arteries, veins and capillaries, as a result of genetic information, and the direction, force and amount of blood flow.

(d) The digestive system

This begins as an oral tube. The upper part divides into two — the trachea and oesophagus. The tube widens as it passes below the diaphragm and becomes the stomach. The intestines develop outside the abdomen and when the muscle and skin of the abdomen enclose them, they are convoluted into the large and small intestine, having a large surface area in a small space to enable maximum absorption of food.

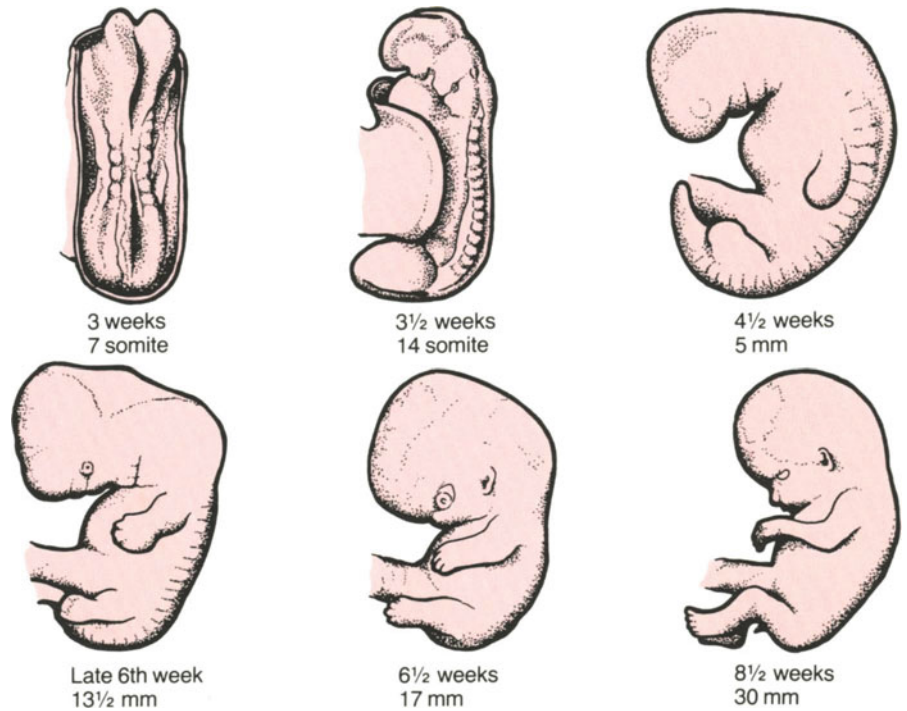


Figure 1.4 External form of the embryo

(e) The respiratory system

This begins with the trachea from which emerge two small tubes — the bronchi. Around these develop a pouch or sac. These are the lung buds. The lungs are solid masses filled with fluid until the first breath is taken at birth.

(f) The bones

The bones of the embryo develop mainly from cartilage except the bones in the vault of the skull. These develop from membranes which ossify from the centre. Where the bones of the vault meet, areas of membrane remain until after the baby is born. Thus the vault alters in shape during birth to facilitate delivery, and the brain is able to grow after birth without being restricted. The bones of the face grow in three directions, the frontal bones downwards, the maxillary bones from either side. They unite in the midline.

(g) Limbs

These grow from the main trunk as buds when the skin and tissue need support. The upper limbs grow in advance of the lower limbs. The fingers and toes develop last of all.

(h) Sex

This is determined at the time of conception. In early foetal life the gonads of both sexes are situated in the abdomen. The male gonads pass down two ducts, called the *Müllerian* ducts, to the scrotum when this sac is fully developed.

The female gonads remain in the abdomen until the pelvis develops. In the female the *Müllerian* ducts become the Fallopian tubes. The lower part of the ducts unite to form the uterus.

(i) Skin

The foetal skin is a continuation of the amnion and at first is a clear membrane. The membrane granulates and skin is formed and develops hair and sebaceous glands. The hair, called *lanugo*, covers the foetus over the whole skin surface before 30 weeks. This gradually disappears as the foetus matures. The sebaceous glands secrete a cream-like substance called *vernix caseosa*. This protects the foetal skin from the liquor. Towards the end of pregnancy the *vernix caseosa* is absorbed but enough remains to ease the passage of the foetus through the birth canal.

Development of support services for the foetus

These are provided by the placenta, the umbilical cord and the foetal circulation.

(a) The placenta

This acts as a selective barrier allowing food and oxygen to pass to the foetus. It stores and produces hormones, and allows waste products to be excreted via the maternal circulation. A healthy placenta also prevents some harmful material being passed to the foetus. Thus a healthy placenta permits the growth of a healthy baby.

(b) The umbilical cord

This is a highway to the foetus. It contains the vessels which carry the traffic of food, oxygen and waste products between the foetus and the placenta. Any obstruction or damage to the cord presents a hazard to the well being of the foetus.

(c) The foetal circulation

Because the needs of the foetus are met by the placenta the foetal circulation is adapted to utilise the placenta instead of the respiratory and digestive systems.

The lungs of the foetus have to grow and be ready for use after birth, and thus require only enough blood to maintain growth and life. Therefore blood from the *pulmonary artery* is directed into a vessel which takes it to the *aorta* before going to the lungs. This is called the *ductus arteriosus*.

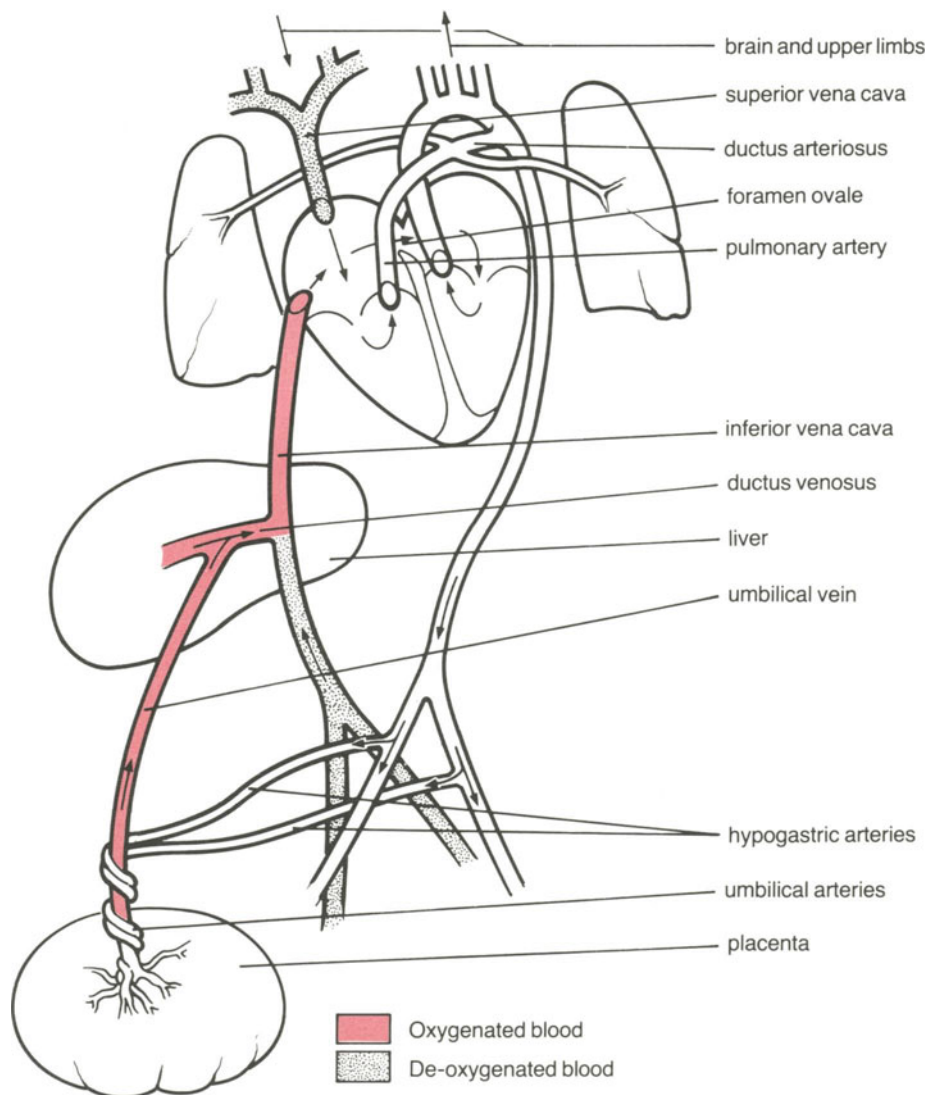


Figure 1.5 Foetal circulation

In the heart the majority of blood is directed to the left atrium from the right atrium. It passes through the opening between the two which is called the *foramen ovale*. This enables some blood to by-pass the lungs. Blood leaving the placenta passes to the foetus through the vein in the umbilical cord, flows through the umbilicus and passes to the liver; a small vessel then takes this blood which is well oxygenated to the *inferior vena cava*. The small vessel is called the *ductus venosus*.

The blood leaves the foetus through two vessels — the *hypogastric arteries* which are situated at the lower end of the aorta. These arteries pass across the abdomen to emerge at the umbilicus and are then known as the umbilical arteries in the umbilical cord. After birth the hypogastric arteries are no longer required and become ligaments. The foramen ovale is closed. The changes take place when the baby has expanded his lungs fully and the lungs require a good blood supply. Sometimes problems arise and congenital heart defects result.

Occasionally an interruption in growth occurs, and a less than perfect infant is born. An interruption in growth may occur as a result of virus infection. Viruses are of small molecular weight and thus are able to pass through the placental barrier when the embryo is most vulnerable, i.e. in the first 12 weeks. The chromosomes in each cell are composed of a chemical similar to the chemical composition of virus. The virus can therefore enter the cell and interrupt the genetic information in the nucleus of each cell.

The *rubella* virus can cause heart defects, deafness and cataracts. It is advisable for girls, before pregnancy, to be exposed to viral infections, e.g. rubella and chicken-pox. Vaccination is offered to 13-year-old girls in order that they may acquire an immunity.

Further reading

The next step in understanding the development of the embryo will be achieved by reading:

Williams, P.L. and Wendell Smith, C.P., *Basic Human Embryology*, Pitman Medical, 1969.

It is descriptive and illuminating.

If you learn best by pictures consider the miracle of birth as portrayed by:

Nilsson, L., *A Child is Born*, Faber and Faber, 1977.

The social and economic consequences of birth impairments and the screening processes by which such impairments can be predicted are dealt with sensitively in:

Wells, N., *Birth Impairments*, Office of Health Economics, 1978.

For those who are interested in nutrition and its effect upon the developing embryo, and seek to understand also the cravings which mothers have for certain foods, read:

Hurley, L. S., *Developmental Nutrition*, University of California, 1980.

Pregnancy is classified as a life crisis within a family. There are changes in many physical, physiological and psychological activities which need to be considered in the care of a pregnant woman and her family. The major causative factors in these changes are:

1. Hormonal.
2. Enlargement of the uterus and breasts.
3. Psychological reactions.

The major hormones of pregnancy

(a) The oestrogens

These are produced in early pregnancy by the corpus luteum, and after about the 12th week by the placenta and the suprarenal cortex of both mother and foetus. Raised oestrogen levels in pregnancy will:

- Increase the number of uterine muscle fibres (hyperplasia) and
- Increase the size of each muscle fibre within the uterus (hypertrophy).
- Increase the thickness of the endometrium (called decidua in pregnancy).
- Cause changes in the consistency in the mucus in the uterine cervix (called the operculum in pregnancy).
- Increase the duct system in the breasts by hypertrophy and hyperplasia in preparation for lactation.
- Inhibit the production of follicle stimulating hormone (FSH) and prolactin from the anterior lobe of the pituitary gland, suppressing ovulation and lactation in pregnancy.
- Increase intracellular electrolytes throughout the body, increasing fluid retention.
- Increase the 'stickiness' and number of blood platelets.
- Create changes in the pH of the vagina.
- Affect psychological moods.

(b) The progesterones

These are produced in early pregnancy by the corpus luteum, and after about the 12th week by the placenta. The blood levels fall dramatically immediately prior to labour. The effects of raised levels of progesterones in pregnancy will:

- Increase secretions in the decidua to provide a suitable site for embedding the fertilised ovum.
- Increase the alveolar system in the breasts and produce secretions from these alveoli — colostrum (pre-milk).
- Relax involuntary muscle tissue throughout the body.
- Increase intracellular electrolytes in conjunction with the oestrogens.
- Relax ligaments, particularly those of the pelvis, in later pregnancy.
- Also affect psychological mood.

(c) Chorionic gonadotrophin

This is produced by the primitive placenta, reaching its highest levels between 8 and 16 weeks' gestation, after which levels become negligible. It is the hormone that is the basis of pregnancy tests. Its function is to maintain the corpus luteum during early pregnancy — essential to maintain the pregnancy.

(d) Adrenocorticotrophic hormone (ACTH) and adrenocorticosteroid hormones

These are produced by the placenta and supported by maternal and foetal adrenal cortices. The effects of increased levels in pregnancy will:

- Increase blood volume and blood cell production.
- Alter renal filtration and reabsorption of some molecules.

- Maintain blood pressure despite relaxed veins and increased blood volume.
- Damp down the possible rejection of the foreign protein of the foetus.
- Increase glycogenic functions within the body.

After delivery the normal physiological functions are restored within six weeks of the birth of the baby in most instances. Hormonal imbalances are restored within 2–3 days of delivery (except for the effects of lactation), the gastrointestinal tract and skeletal system after about a week. The genital tract and progestogenic relaxation effects upon blood vessels and the ureters take about six weeks to return to normal.

The enlargement of the uterus and breasts

Uterine size increases due to oestrogenic action from its pre-pregnant size of about 2.5 cm × 5.0 cm × 7.5 cm and a weight of 50–60 g to 20 cm × 23 cm × 30 cm and a weight of about 1 kg. The size is also affected by the growing foetus and its surrounding amniotic fluid after about the 20th week of pregnancy. From being a pelvic organ, the growing uterus encroaches into the abdominal cavity until it reaches a level just below the xiphisternum (ensiform cartilage). The effects of this growth involve the abdominal organs, which are displaced; posture, and in the later weeks of pregnancy the urethra is stretched and the diaphragm is splinted.

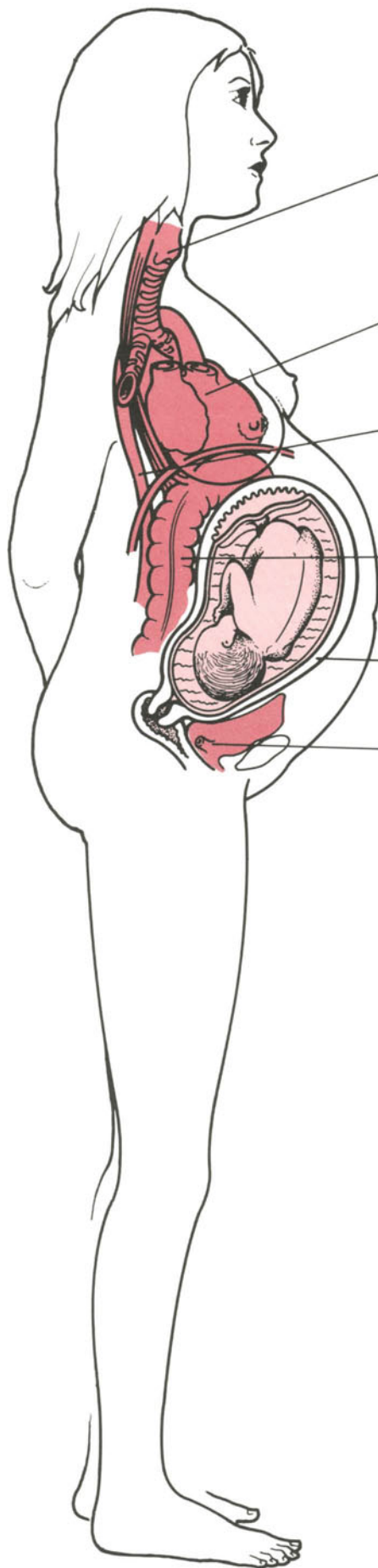
The breasts enlarge due to oestrogenic and progestogenic levels. The size can increase very considerably, but varies from woman to woman.

Psychological factors

Pregnancy is a time of great mood swings, which can be very disconcerting both for the pregnant woman and her family. During the first trimester (three months) of pregnancy the mood can suddenly switch from great elation over the fact of pregnancy, to indifference or antipathy towards it. This can be true both in wanted and unwanted pregnancies. Discomforts during early pregnancy can increase antipathy. The midwife needs to understand that such changes in mood do occur during this period. She may need to reassure a pregnant woman or her husband that this is a quite normal process. The midwife must also be alert to great feelings of hostility towards the pregnancy as a warning that there may be tensions that should be investigated by a doctor or social worker.

During the second trimester of the pregnancy the mood tends to be much more stable. This is a period when the pregnant woman will often both look and feel very well physically and will energetically start to prepare for the birth of her baby. By about the 20th week of pregnancy she may start to feel foetal movements '*quickening*' and abdominal enlargement becomes obvious. Thus the fact of the pregnancy becomes a reality. If the mother has experienced emesis gravidarum (morning sickness) in early pregnancy, it has usually passed by the second trimester. Cravings for unusual, often strongly flavoured, foods may be experienced during this time. Occasionally these are rather bizarre, e.g. toothpaste, charcoal. They may also occasionally reflect a physiological lack, e.g. high potassium content in soft drinks ('pop').

The third trimester of the pregnancy usually has a continuation of the stable mood, but with mounting excitement as the pregnancy progresses. During the last 6–8 weeks there may be periods of despondency as mobility becomes more difficult. Sleeplessness may be a problem, particularly if the foetus is active at night. This may lead to a feeling of tiredness and lassitude during the day. At some point in most pregnancies the expectant mother worries about possible abnormality of her foetus. She is particularly vulnerable to 'old wives' tales' during this period, which is often towards the end of the pregnancy. Such fears need to be understood by the midwife in order to counteract any irrational worries. By the end of the pregnancy most women become impatient, wanting the delivery to be over and also may be frightened at the prospect of labour. This can be overcome in part by good antenatal preparation of the pregnant woman and her family through a good relationship with the midwife and doctor who share her antenatal care.



SKIN

There is pigmentation of the nipple and areola, the linea alba and sometimes of the face.

RESPIRATION

There is an increase in vital capacity and O₂ consumption to allow for the needs of the foetus and the additional urine and breast tissue.

HEART AND CIRCULATION

Cardiac output rises and blood pressure falls, probably due to the uterus acting as an arterio-venous shunt (pools of blood in the intervillous spaces, not a capillary network). Foetal growth generates heat, and this, together with the increased bloodflow, gives the mother a feeling of warmth.

BLOOD

The volume increases by 30% (4–5.4 litres on average), presumably because of the increased size of the uterus and its increased requirements. (The placenta acts as kidney, lung, liver and intestines for the foetus.) Increased fibrinogen leads to a rise in ESR.

STOMACH AND INTESTINES

Less gastric acid is secreted and motility decreases. Nausea and vomiting are common in early pregnancy, probably due to hormonal changes.

UTERUS

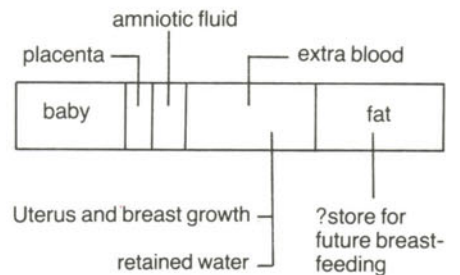
There is a vast increase in size and weight (30 g in a virgin, 1 kg at term) due to hypertrophy of existing muscle fibres and formation of new fibres.

URINARY SYSTEM

The ureters lose muscle tone

METABOLIC CHANGES

The increase in weight (9.5–12.75 kg) is made up as follows:



There is a tendency to *glycosuria*; mothers showing this should be watched for later diabetes.

Calcium metabolism

The baby takes a total of 25 g by birth. More is required for lactation. The parathyroid glands enlarge during pregnancy probably to aid the mobilisation of calcium from the skeleton.

Iron

Extra is needed during pregnancy and lactation: 375 mg for the baby; 500–700 mg for the extra maternal haemoglobin; and a variable amount for losses in blood at delivery and afterwards in the milk.

Figure 2.1 Physiological changes in the mother

Social stresses, medical problems during the pregnancy or mistrust of people in the midwifery service can cause some of the minor problems in this period to get out of proportion. This can create unnecessary hardship for the mother. Careful observation and care of the patient as an individual can minimise problems.

Some effects of childbearing on pre-existing pathology

(a) Anaemia

Due to an increase in blood volume greater than the increase in red blood cell production, haemodilution occurs during pregnancy. Frequently the haemoglobin level falls by 2 g below normal for the individual. For this reason haemoglobin levels are assessed for each pregnant woman in early pregnancy, at about 32 weeks' gestation and usually at least once between these times. Mild anaemia can then be treated with iron or iron and folic acid supplements are necessary.

Anaemia of pregnancy is more common in those women starting pregnancy with a lowered haemoglobin level; in multiple pregnancy; or in those women who develop urinary tract infections during the pregnancy. Blood loss at delivery and vaginal loss in the puerperium may cause significant problems in women who are relatively anaemic at the end of the pregnancy.

(b) Cardiac disease

Some cardiac stress is present in all pregnancies due to increased blood volume and the gain in weight within the uterus, the foetal sac and the breasts. This is usually only of significance in women with pre-existing cardiac disease incompetence. The major cause of such disease has moved from rheumatic heart disease to congenital heart defect over the past two decades.

Medical and nursing care aims to prevent deterioration of the cardiac state during pregnancy. This is achieved by early diagnosis of any cardiac incompetence and increased rest if such incompetence is discovered. In moderate or severe cardiac disease this may entail extended periods of full bed rest, so that cardiac stress is minimised.

(c) Diabetes mellitus

The dynamic changes taking place in hormonal levels during pregnancy and the early puerperium cause instability in pre-existing diabetes. This is particularly marked in the first trimester of pregnancy and the first three days of the puerperium, but it is present to some degree throughout the pregnancy. Admission to hospital for stabilisation of the diabetic state may be necessary. Unstable diabetes increases the risk of spontaneous abortion, premature labour or the delivery of a baby affected by hypoglycaemia.

It is possible for gestational diabetes to occur, possibly due to a combination of unstable hormonal balance and an increased glycolytic effect in pregnancy. This is treated with insulin, as for pre-existing diabetes. It is important for glycosuria to be excluded at each antenatal visit, as this may be the first sign of gestational diabetes.

(d) Drug abuse (including alcohol and cigarette smoking)

A positive correlation between drug abuse and poor intra-uterine foetal growth has been established. This may lead to spontaneous abortion or birth of a baby who fails to thrive as it should. The baby may suffer from withdrawal symptoms after delivery, as it is no longer receiving the blood-borne drug across the placental barrier.

Alcohol abuse by pregnant women has been recognised as a possible problem for the foetus and the newborn baby. There is an increased incidence of poor foetal growth, premature labour and possibly foetal abnormalities. The newborn baby of an alcoholic mother may be small for its gestational age and also undergo alcohol withdrawal symptoms which may include fits.

The link between cigarette smoking and poor foetal growth/failure to thrive after birth seems to be less direct than with some other drugs. However, when smoking is combined with other causes of poor foetal growth (e.g. hypertension) the foetus may grow less well than that of the non-smoking mother. This may be due to constriction of the uterine blood vessels due to the effect of nicotine or a chronic oxygen starvation.

Pregnant women who abuse any drug may be less well nourished than they should be due to the expense of their habit, and thus provide a poor nutritional environment for the foetus. Anaemia may also be present.

(e) Hypertension

A hypertensive syndrome specific to pregnancy (*pre-eclampsia*) can occur, particularly in first pregnancies; when hypertension is pre-existing; in multiple pregnancy; obesity; or when previous pre-eclampsia has occurred. The aetiology is unknown. A combination of hypertension, oedema and proteinuria can occur at any point in pregnancy, but more commonly in the third trimester. The condition can deteriorate to *eclampsia*, when convulsions due to cerebral oedema are a feature and permanent renal or liver damage can occur.

Observations at each antenatal visit of blood pressure, pretibial or finger oedema and urine analysis for proteins are made by the midwife to ensure that early signs of the condition are excluded. Medical and nursing care are aimed at reducing the signs and preventing deterioration by bed rest and, if necessary, drug therapy.

The dangers of pre-eclampsia are mainly to the foetus. The condition is associated with poor intra-uterine foetal growth — sometimes as much as 3 kg less than the expected weight at term, due to damaged perfusion of foodstuffs and possibly oxygen over the placental barrier. In severe pre-eclampsia or eclampsia foetal death may occur and the mother is at risk of renal or liver damage.

Pre-existing hypertension at the start of the pregnancy predisposes the pregnant woman to the risk of moderate or severe pre-eclampsia.

(f) Renal disease

Renal disease prior to pregnancy predisposes a pregnant woman to urinary tract infections and possibly to pre-eclampsia.

Due to the relaxing effect of progesterones on the ureters these structures become very much enlarged during pregnancy and they may develop bends or kinks. This causes slow urinary flow through the ureters or even stasis of urine — an ideal growing medium for bacteria. Bacterial infection may ascend to the uterus from the urethra and bladder, may transfer via the lymphatic system from the intestine or may be present without causing symptoms within the urinary tract before pregnancy occurs. During pregnancy perfusion of waste substances from both the mother and the foetus through the kidneys puts more stress than usual upon these organs. Any pre-existing but undiagnosed renal damage in the pregnant women may become apparent due to this increased renal stress during pregnancy or the very early days of the puerperium.

A specimen of urine is usually taken in early pregnancy to exclude asymptomatic bacteriuria in the laboratory. At each antenatal visit routine urine analysis for protein is performed in order to exclude the possible presence of bacteria or protein perfusion through damaged kidneys. Urinary tract infections in pregnancy may predispose the pregnant woman to folic acid deficiency anaemia or in severe occurrences to renal damage. There is some risk to the foetus due to the toxic effects of severe urinary tract infection.

Summary of the effects of pregnancy on the mother's body

System	Changes in pregnancy	Possible effect on pregnant women	Midwifery observations, care and advice
1. Genital tract			
(a) Uterus			
extra size	Stretching of round ligaments and Fallopian tubes	Occasionally vulval and/or lower abdominal pain or discomfort	Should be seen by doctor to exclude any pathology. If none, reassure patient
	Abdominal organs displaced	Flatulence, minor digestive upsets Very occasionally, volvulus	Advise on diet — small, frequent meals may help. Increase fruit and vegetable intake Emergency — requires immediate medical care.
	Uterine fundus reaches highest point at 36–38th week of gestation	Breathlessness. Discomfort when sitting. Gastric reflux	May require more pillows in bed at night. Keep exercise gentle
	Stretching of urethra in later weeks	Occasionally, urinary retention	Needs to be seen by doctor. Catheterisation may be needed
extra weight	In early weeks, weight of growing uterus on bladder	Frequency of micturition	Test urine for protein, in case of infection. Otherwise reassure patient
	In later weeks, pressure of foetal head on bladder	Frequency of micturition	
(b) Vagina			
changes in pH	Increased discharge — leucorrhoea	Increased vaginal discharge	Encourage vulval hygiene
	Increased tendency to monilial infection	Itching, sometimes slight bleeding	Needs to be seen by a doctor
(c) Ovary			
maintenance of corpus luteum	Very occasionally, torsion of corpus luteum	Acute abdominal emergency	Emergency — requires immediate medical care
2. Urinary tract			
(a) Bladder and urethra	Very occasionally, torsion of corpus luteum	Frequency of micturition. Retention	
(b) Ureters	Relaxation due to progesterone effect — capacity increases, peristalsis slows. Occasionally kinking of ureters	Increased tendency to urinary tract infection Ureteric retention of urine with backflow → hydronephrosis	At each antenatal visit urine tested for protein. If present collect a midstream specimen of urine
(c) Kidneys			
changes in renal threshold	Threshold for glucose can be decreased	Glycosuria, particularly after a meal	At each antenatal visit urine tested for glucose. Doctor may request a glucose tolerance test
(ACTH effect)	Occasionally lowering of threshold for potassium and calcium	Cramps	Advise on treatment for cramp. Suggest extra milk is taken
3. Circulatory system			
(a) Blood vessels	Relaxation due to progesterone effect. (Plus weight of uterus on iliac veins)	Varicose veins of legs, vulva, rectum. (Haemorrhoids)	Advise about resting with legs and pelvis raised. If severe or painful, needs to be seen by a doctor. May persist to some extent after delivery
(b) Blood plasma	Increases by 40–60%	Haemodilution — haemoglobin estimation falls to about 2 g below normal	Blood for haemoglobin estimation needs to be taken regularly during pregnancy. Encourage the taking of iron tablets, if prescribed, and an iron rich diet
(c) Red blood cells and Hb	Increase by 15–20%		
(d) Platelets	Can increase by 200%, become more sticky	Possibility of deep vein thrombosis	Examine and palpate legs at each antenatal visit

System	Changes in pregnancy	Possible effect on pregnant women	Midwifery observations, care and advice
(e) <i>Fibrinogen</i>	Increases by 100% in very late pregnancy	Helps to prevent post-partum haemorrhage	
(f) <i>Leucocytes</i>	Increase by 50% in very late pregnancy	Helps to prevent post-partum infection	
(g) <i>Blood pressure</i>	Should remain stable, but weight of uterus can slightly occlude inferior vena cava when supine	Supine hypotensive syndrome	Blood pressure must be taken at each antenatal visit. If supine hypotension occurs, turn patient on to her side — she will rapidly recover. Reassure. Listen to the foetal heart rate
(h) <i>Heart</i>	Due to extra work, some hypertrophy. Some displacement during later weeks of pregnancy	Occasional murmurs heard, but there should be no effect on the healthy heart	Pulse should be taken at each antenatal visit at the same time as foetal heart rate. Always ask about general condition
4. Gastro-intestinal tract			
(a) <i>Pyloric sphincter</i>	Can relax — progesterone effect	Heartburn. Occasionally oesophagitis	Advise about drinking extra milk. Extra pillows at night can help to relieve night-time heartburn
(b) <i>Stomach</i>	Peristalsis slows — progesterone effect	Slower emptying of stomach	Advise that food should be taken in small, frequent meals
	Hydrochloric acid decreases slightly	Can cause indigestion. Also has an effect on taste buds. ? the cause of some cravings (pica)	Antacids should be avoided — they can make the problem worse
	? hormonal, ? psychological, ?? cause	Emesis gravidarum — sickness of pregnancy. (Commonly called 'morning sickness')	Usually patients accept this as a part of pregnancy. Sometimes can be eased by a warm drink and biscuit prior to rising
(c) <i>Small intestine</i>	Peristalsis slows — progesterone effect	Occasionally some malabsorption, particularly of fats	Test urine for ketone bodies
(d) <i>Large intestine</i>	Peristalsis slows. Water absorbed from stool	Constipation	Encourage fluids and extra fruit and vegetables. A light laxative, e.g. Senokot, may help
5. Skeletal system			
(a) <i>Pelvic joints</i>	Relaxation of ligaments. ? progesterone	Backache	Advice re posture should be given. General advice concerning the firmness of the mattress may be of use
(b) <i>Spine and posture</i>	Increased lumbar lordosis due to weight of the uterus and breasts	Backache, 'waddling gait' of pregnancy	Antenatal exercises should be encouraged
6. Endocrine system			
(a) <i>Posterior pituitary</i>	Increases production of melanocyte-stimulating hormone	Pigmentation of nipple, primary and secondary areola, and face (chloasma); linea nigra on abdomen and vulva	The pigmentation will usually disappear after the pregnancy, so the patient can be reassured if she is worried
	Small decrease in antidiuretic hormone. Combines with increased cellular electrolytes from increased oestrogens and progesterones	Minimal oedema in many tissues. If contact lenses are worn, oedema of the cornea can be a problem. Occasionally carpal tunnel syndrome occurs	At each antenatal visit the patient should be weighed to ensure that there is no abnormal weight gain (occult oedema). The pre-tibial area and ring finger should also be examined for oedema. If oedema is detected the patient should be seen by a doctor
(b) <i>Thyroid</i>	Some increase in thyroid secretion	Increase in basal metabolic rate. Often feeling of warmth — uncomfortable in summer	—
(c) <i>Pancreas</i>	Pancreatic function can sometimes decrease or glycogenic function increase	Occasional gestational diabetes	At each antenatal visit the urine must be examined for glucose and ketone bodies
(d) <i>Suprarenal cortex</i>	Hypertrophies, with an increase in corticosteroids	Skin and hair condition often improve. Inflammatory diseases improve for the duration of the pregnancy	—

Care Plan for Mrs Hobbs, part 1: During pregnancy

The successful outcome of a pregnancy depends to some extent upon good team work, an effective relationship between the family concerned and the professionals who offer care.

Mrs Hobbs, already many weeks pregnant, went to see her family doctor and met, for the first time, Sister Cross, the midwife, and also the health visitor.

At the end of an hour Mrs Hobbs and Sister Cross had achieved their first objective — they had established a partnership. Sister had learned that:

- Mrs Hobbs, a pretty 26-year-old housewife, was the mother of two robust sons, Robert (nine years of age) and Simon (five years). Mr Hobbs was a builder who had done much to improve their home — a semi-detached three-bedroomed house in the small market town.
- The pregnancy was unplanned as finances were tight, but Sally Hobbs and her husband hoped for a daughter this time. She was anxious to know when the baby was due, but like many mothers was a little vague about the first day of her last menstrual period. She thought it was about 21 March. Sister added seven days, i.e. 28 and subtracted three months and estimated the expected date of confinement to be 28 December 1981.
- Sally talked about her previous pregnancies which appeared to have been tiring, but otherwise problem-free. The first labour had been long and difficult, terminating in a forceps delivery; the second labour was only six hours in length. Sally disliked most the last month of pregnancy and the first two weeks after her baby was born. She recalled these as periods of fatigue, short temper and gloom. She had breast-fed both infants for a short time only. Both confinements had taken place in the Consultant Unit 10 miles away.

Before discussing the place of confinement, an assessment of Mrs Hobbs' general health and the growth of the foetus was necessary.



(a) Mrs Hobbs proved to be fit

Height 1.6 metres, weight 61.7 kg. Her teeth were good. She had already stopped smoking, saving the money for a holiday. The fundus of the uterus was palpated a little more than halfway between the symphysis pubis and the umbilicus — which was compatible with the estimated period of amenorrhoea, i.e. 17 weeks. The breasts were active, heart, lungs, urine were normal, blood pressure within normal limits. Mrs Hobbs was free of varicose veins. A sample of blood was taken for an estimation of haemoglobin, and a screening test for certain foetal abnormalities. The purpose of the last was explained to Mrs Hobbs, who readily agreed.

(b) The place of confinement

The various possibilities were discussed. Mrs Hobbs liked the idea of having her baby in the local general practice maternity home, only five miles from her home. She learned that Sister worked in the Home and in the community and that the GP (general practitioner) called daily. Mrs Hobbs asked how long she could stay in the Home after confinement, indicating that she would welcome the chance to be free of household chores during the first week.

A date was arranged for Mrs Hobbs to see the Home and meet the other members of staff. She left the health clinic having met the dietician, and received advice and pamphlets about nutrition.

(c) Home assessment

In August Sister Cross visited the Hobbs family at home. She wanted to gain an insight into the social and family environment into which the new baby would be integrated.

Bearing in mind Mrs Hobbs' dread of puerperal fatigue, Sister Cross discussed the need for help in the home. Mrs Hobbs had a good neighbour who had agreed to care for the children while she was in hospital. Mrs Hobbs senior was willing to help the following week. The state of the business in December was unpredictable, but Mr Hobbs hoped to be able to take some time off.

Mr Hobbs' main fear was that of a handicapped child. Sister was able to reassure him about the blood test which had been taken and she also collected a portable Sonicaid from her car, by which Mr Hobbs heard his baby's heart beat. He called the children, who regarded the 'radio' with some suspicion. Sister was satisfied that the foetus was growing and that Mrs Hobbs was well.

Mr Hobbs asked if he and the children could visit the Maternity Home. This was agreed.

(d) Maternity Home visit

The birth of an infant is a momentous occasion whenever it takes place. It is a privilege to participate in such an event and staff and environment should be acceptable to the family.

Mr and Mrs Hobbs went to the Maternity Home one evening. Mr Hobbs was interested to see that there was a suite for fathers. He hoped he wouldn't need to stay overnight because of Robert and Simon. Both he and his wife were convinced that the Maternity Home was the ideal place for Sally. They were given a written account of the Home, the names of the staff, also a B1 form entitling Mrs Hobbs to the maternity grant which she would be claiming on her husband's earnings.

Sister checked Mrs Hobbs' blood pressure and urine, and noted that the foetus was continuing to grow. The foetus, now of 28 weeks' gestation, was considered 'viable'. The foetal heart rate was recorded with all the other details on the cooperation card.

Mrs Hobbs complained of some 'cramps' in her legs, and was prescribed embrocation and paracetamol tablets. She was advised to try dorsiflexion on her feet. Her haemoglobin level was reasonable. Although she had had two children before, she opted to attend parentcraft classes at the Home. She thought she would enjoy the company of other mothers. Dates and times of the classes were given. On 21 November Mrs Hobbs and Sister met again — this time at the clinic. As Mrs Hobbs came in Sister noticed that she was looking weary and recollected that this was the time she dreaded — the last month of pregnancy. Over a cup of milky coffee, Mrs Hobbs mentioned that while Robert was eagerly looking forward to the new baby's arrival, with an almost paternalistic protective outlook, Simon was almost seeming to regress. Suddenly after managing quite successfully for some time to do his own shoe-laces, he had lost the ability even to put his own socks on — she had to do it for him. Mrs Hobbs related how a few days later she became aware that Simon, who was playing in his bedroom, was unusually quiet; she tiptoed upstairs to find him dressing his quite dilapidated and well-loved teddy bear in all the beautiful white baby clothes she had been carefully collecting for the new arrival!

Mrs Hobbs seemed relieved to talk. They discussed ways and means of preparing and integrating the various members of the family. Both boys had asked when the 'lady with the radio was coming again'. Sister Cross suggested calling at the house when the next visit was due. This would save Mrs Hobbs a journey and give Robert and Simon an opportunity to listen to the 'radio' again.

Sister decided that some of the weariness could be due to anaemia. The haemoglobin level had fallen to only 10.5 mg. A large dose of iron was advised, as were folic acid tablets. Mrs Hobbs declared that the 'cramps' had gone. The foetus had grown and was moving, and sometimes woke her at night.

Mrs Hobbs was well prepared for labour, had been pronounced fit for inhalation analgesia, and had enjoyed the parentcraft classes. Mr Hobbs had accompanied her on one occasion and had been surprised to find so many fathers present.

On the 8 December Sister Cross visited Mrs Hobbs at home again. The GP and Sister Cross were concerned about Mrs Hobbs' level of haemoglobin at this stage of pregnancy. The purpose of this visit was to:

1. Discuss with Mrs Hobbs the value of Jectofer injections. As the body is only capable of absorbing a comparatively small amount of iron from the gut each day the needs of the anaemic pregnant woman cannot be entirely supplied by oral iron therapy. During the pregnancy the body conserves iron in the order of 25 mg per month due to the cessation of the menstrual flow. Jectofer (an iron-sorbitol-citric acid complex) contains 100 mg in every 2 ml ampoule and the dosage recommended is 1.5 mg/kg bodyweight per day. Nausea, vomiting and dizziness may indicate an overloading of iron. It is anticipated that each 1 ml Jectofer given will raise the haemoglobin level by approximately 1%.
2. Ensure that arrangements for labour were acceptable and understood.
3. Confirm arrangements for care of the family while Mrs Hobbs was in hospital.
4. Check foetal growth and make the necessary records.

Mrs Hobbs agreed to have the injection of Jectofer and on Sister's advice discontinued taking iron tablets.

Sister Cross returned 24 hours later to give a test dose of Jectofer in order to preclude the possibility of an allergy to the drug. Great care must be taken when the injections are administered. Primarily, the solution should be drawn up in the bathroom away from fabrics, as even one drop may cause an extremely stubborn stain. It should be given in the upper, outer quadrant of the buttock, deep into the tissues. These precautions prevent an unsightly staining of the skin.

Mrs Hobbs showed Sister the nursery, which was ready. It was the smallest bedroom in the house, and thus the warmest. She also had a bag packed for herself, and a list of essential telephone numbers by the 'phone.

On 13 December, Mrs Hobbs met the consultant. He was anxious to ensure that there had been no developments since the original booking was made for the GP Home that would warrant transferring Mrs Hobbs to the Consultant Unit.

Mrs Hobbs weighed 70.3 kg and her blood pressure was 130/70 mm Hg. On abdominal palpation the lie was longitudinal, and the presentation cephalic, the foetal head being felt to be at the pelvic brim.

The consultant requested to see Mrs Hobbs again if she was undelivered by 10 January when she would be almost 41 weeks' gestation.

On 27 December, Sister Cross examined Mrs Hobbs again. Her weight had dropped to 69.4 kg, but apart from that she was well. She had spent Christmas very busily. Her blood pressure now seemed to have settled down at 110/60 mm Hg. Her urine was tested and no abnormal deposits were noted. She had a case packed in readiness for admission to the Maternity Home at the appropriate time. On *palpation*, the foetus was lying longitudinally, the *presentation* was *cephalic* and the position was *right-occipito-lateral*. The foetal head was now *engaged* and the heart was auscultated. Blood was taken from Mrs Hobbs to assess the haemoglobin content. This, the day after the Boxing Day holiday, was to be the last antenatal examination. Jectofer was discontinued.

The physiology and management of labour

The birth of the child is awaited eagerly and sometimes fearfully by the parents. If they have been attending parentcraft classes, or have read any of the many books written about childbirth, they will be aware of the signs that labour has begun.

(a) The first stage of labour

Childbirth commences with the first stages of labour; this may be heralded by regular contractions of the uterus. These contractions become more painful as they become stronger. The mother may have a loss per vaginam; this is operculum or 'show'. The operculum is a mucoïd plug which has been sealing the cervical canal throughout pregnancy. It is a clear tenacious mucus, but may contain some blood. Occasionally the membranes enclosing the liquor amnii around the foetus rupture at an early stage in labour and the liquor is lost per vaginam. Rupture of the membranes usually happens towards the end of the first stage of labour. In pregnancy the uterus is prepared for the hard, muscular activity of labour. Thus the uterus has increased its total muscle content by increasing muscle length to ten times its original length, and the muscles are five times thicker than in the non-pregnant uterus. The uterus has also been contracting gently. These *Braxton Hicks* painless contractions increase the good muscle tone in the uterus. Such preparation is not unlike the preparation an athlete would make before a big race. The upper part of the uterus contains the largest proportion of muscle; the muscle fibres are longitudinal and oblique. The lower part of the uterus contains mainly circular fibres.

When labour begins the upper half contracts and becomes thicker while the lower segment thins out and allows the presenting part to enter into the cavity of the pelvis. The upper and lower segments of the uterus have a harmonious relationship — the upper segment is dominant and the lower segment is passive. The harmony between the two segments is called *polarity*.

Figure 3.2 is a diagram of the passage through which the foetus must pass. In (a) note the difference between that of the primigravida and that of the multigravida.

1 Primigravida

Effacement of the cervix occurs during the first stage of labour. At the end of the first stage of labour the cervix is fully effaced and dilated.

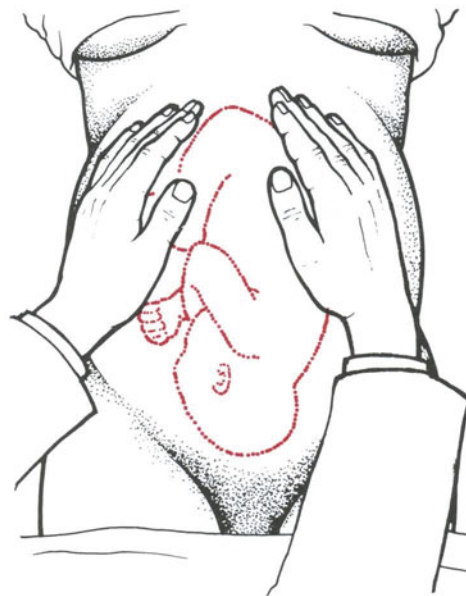
2 Multigravida

- (a) 38th week of pregnancy. *Dilatation* has begun but no effacement has yet occurred.
- (b) First stage of labour. Effacement and dilatation are occurring simultaneously.

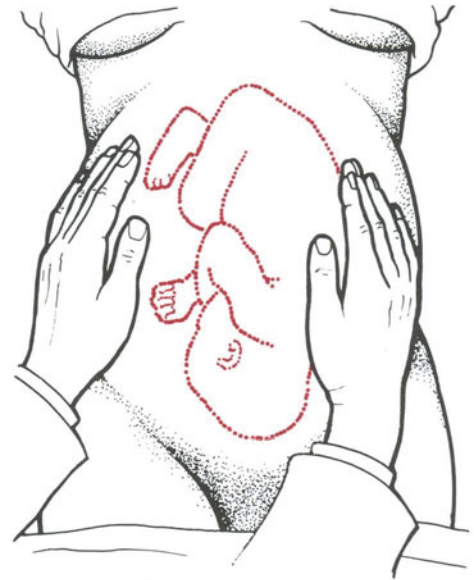
The cervix at the beginning of labour is long, thick and closed; at the end of the first stage the cervix is fully dilated and is unable to be felt upon vaginal examination. The opening up of the cervix is dilatation, and the thinning process is called effacement. This process is the result of the contractions of the uterus.

In a *primigravida* effacement will take place before dilatation and the time taken until the cervix is fully dilated at the end of the first stage averages 12 hours.

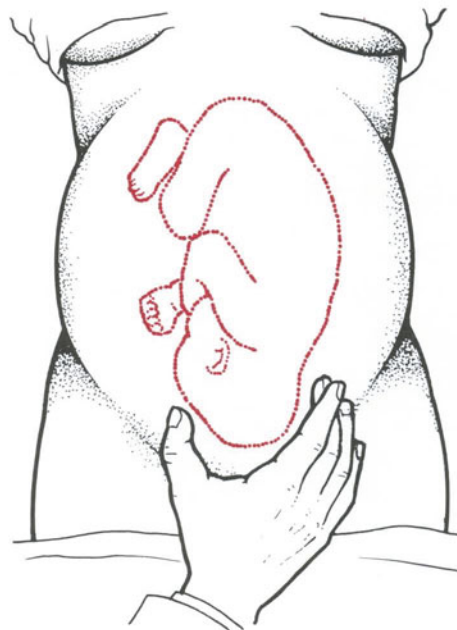
A *multiparous* woman has a shorter first stage. Effacement and dilatation happen simultaneously, thus the average length of time is eight hours. The midwife will assess the dilatation and effacement of the cervix at regular



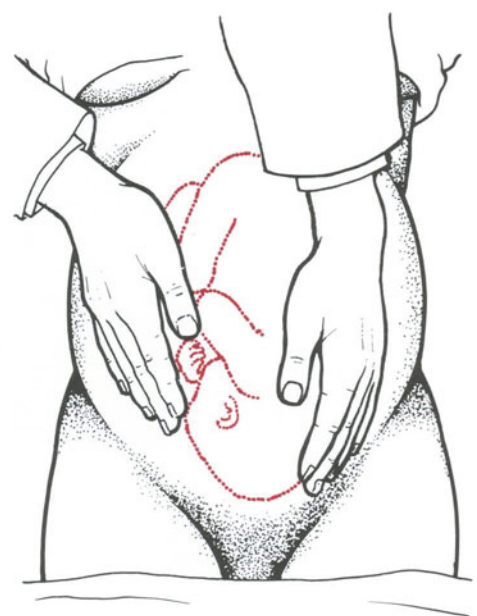
(a) The 'lie' refers to the long axis of the foetus to the mother.



(b) The attitude of the foetus in this diagram is one of flexion, i.e. all the joints are flexed and the chin is on the chest.



(c) The 'presentation' relates to that part of the child which occupies the lower segment of the uterus.



(d) The 'position' of the foetus refers to the relationship of the presenting part to the bones of the pelvis

Figure 3.1 The hands of the midwife determine the position of the foetus in the uterus.

intervals throughout the first stage. When the fully dilated cervix is approximately 10 cm in diameter, the foetal head can pass through into the birth canal.

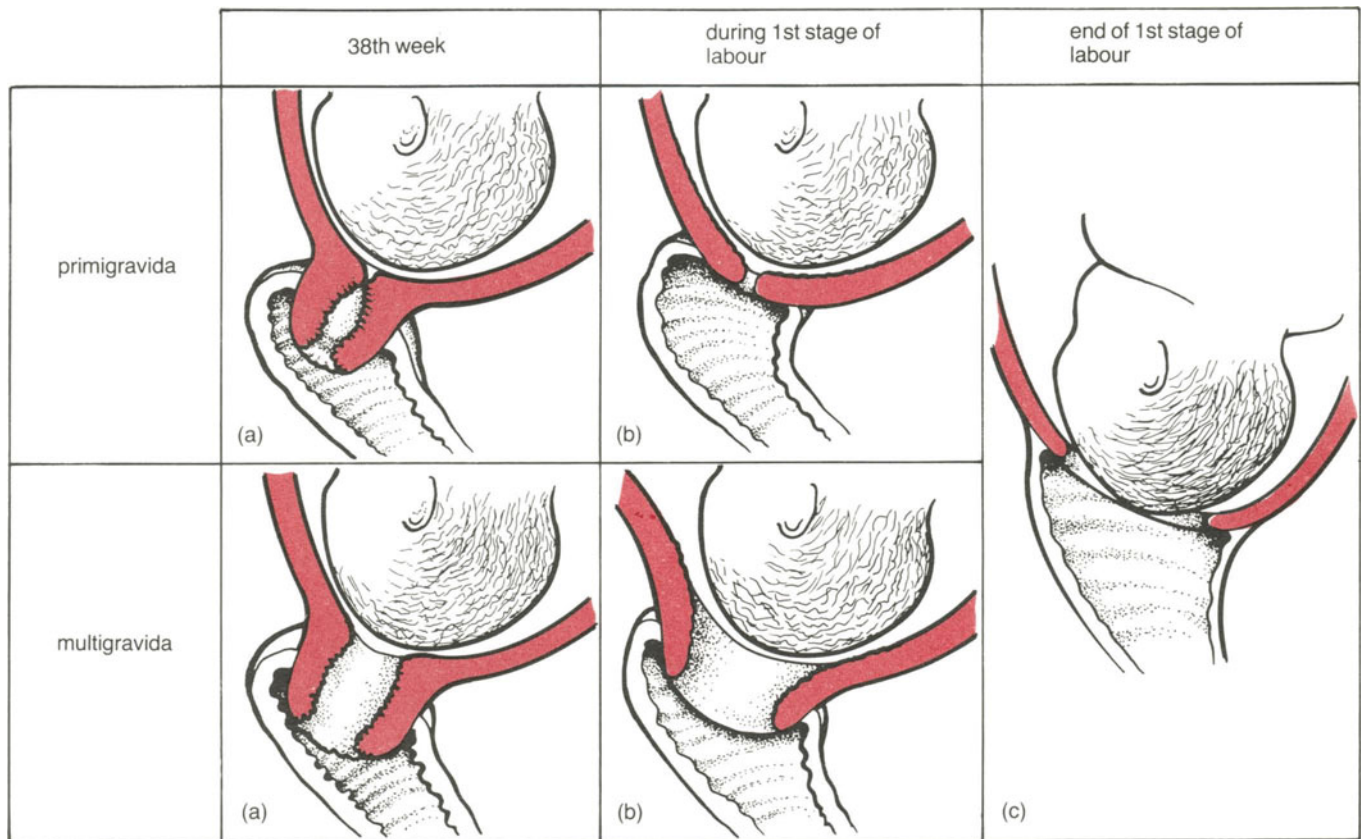
A healthy mother is more likely to have a shorter labour because of good nutrition, good muscle tone and an efficient blood supply. The uterus is working very hard and the mother should be encouraged to relax between contractions.

Inevitably the process of labour causes discomfort in varying degrees to the mother.

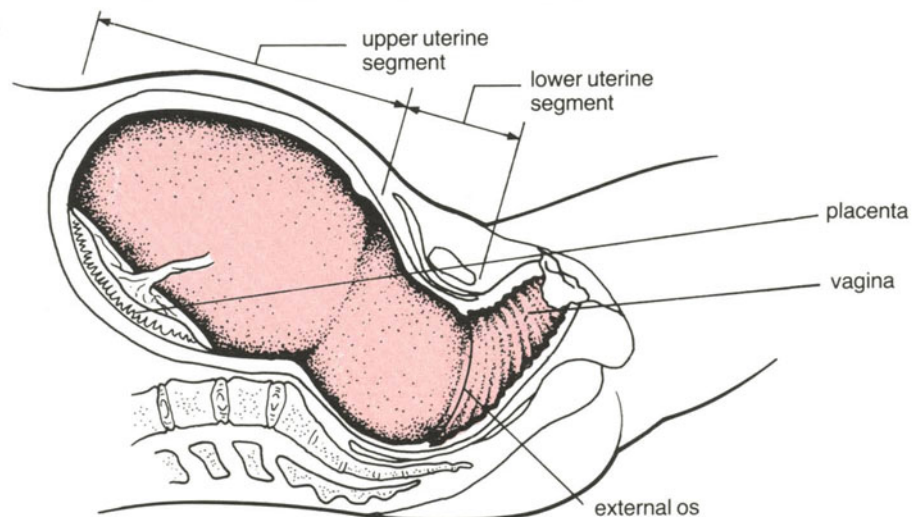
Discomfort may be reduced by attending to the following:

1. Relief from fear:

- (a) Knowledge of the facts of labour, and of progress.
- (b) Rapport with the attendants, the midwife and her assistants.
- (c) The presence of the husband and mother will help to remove fear.



(a) Primigravida and multigravida.



(b) The birth canal of the mother in the second stage of labour

Figure 3.2 The passage through which the foetus must pass.

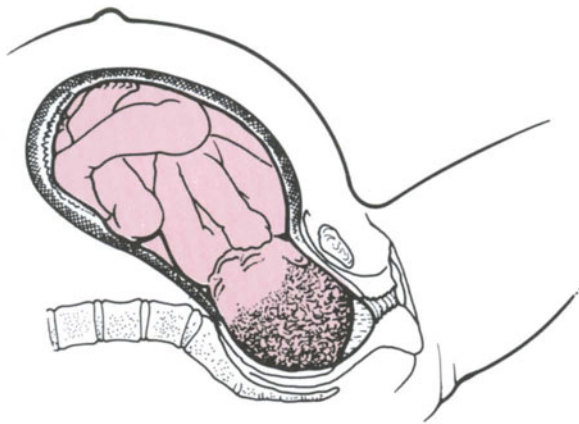
2. Emptying the bladder.
3. Position — some mothers may prefer to stand or sit, others use the prone position.

In many obstetric units a machine is used, and by measuring intra-uterine pressure through a catheter, can record contractions on a continuous basis. The midwife should still palpate the uterus, and note the contractions in order to check that the machine is recording properly.

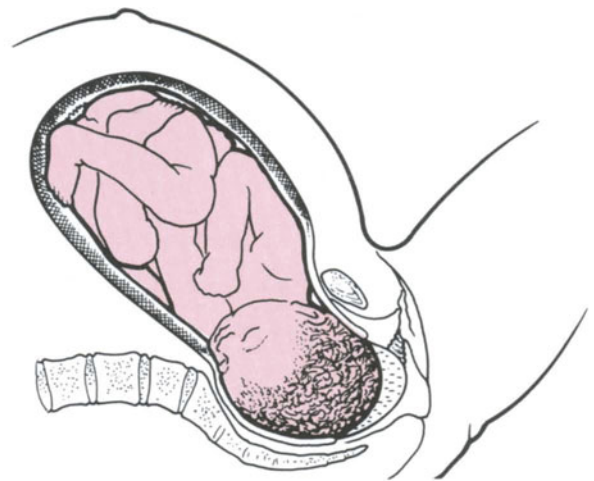
The foetus must descend and negotiate the long passage of the maternal pelvis, which is designed for the purpose of childbirth.

The uterus must work to enable the foetus to make its journey. The soft tissues of the cervix uteri must retract to make a clear passage to the pelvic floor.

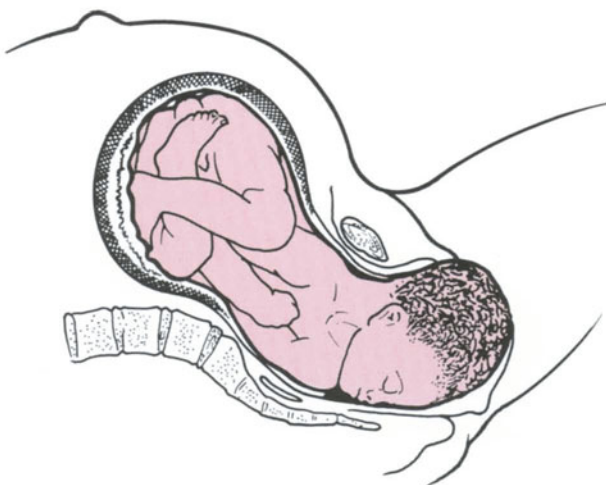
The pelvic floor is so shaped that it will enable the foetus to rotate into a good position so that it can negotiate the pelvic outlet.



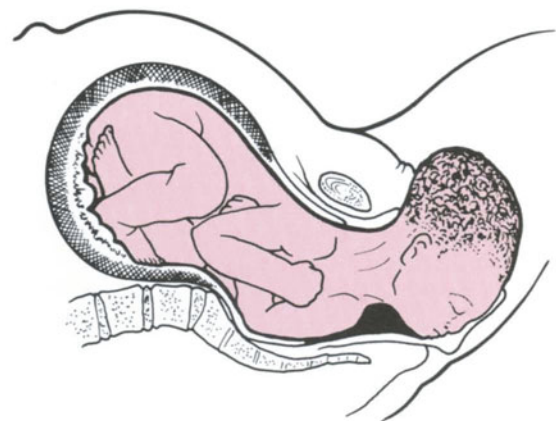
(a) Late first stage. The cervix is now 7 cm dilated and further flexion of the foetal head has occurred. The membranes are still intact.



(b) Early second stage. The cervix is fully dilated, and the head is beginning to rotate at the level of the ischial spines. Rotation is through 90°, so that the occiput lies in the anterior segment of the pelvis and the sagittal suture of the foetal head in the antero-posterior diameter of the pelvis. The membranes are intact and bulge in the front of the head.



(c) Late second stage. The head is breaching the vulval ring ('crowning'). The membranes have ruptured. The perineum is stretched over the head.



(d) Birth of the head. As the foetal head is pushed through the vulval ring it extends on the neck, and the perineum is swept over the face. The direction of movement of the head is now upwards. The uterus has retracted to fit closely over the foetal body. The shoulders are still in the transverse diameter of the midpelvis

Figure 3.3 The mechanism of labour.

The vagina must expand to enable birth to take place.

The midwife should check the descent of the foetus. The touch of the midwife is very reassuring and comforting at this time.

The foetal heart should be auscultated and recorded at half hourly intervals at least. This can be recorded by machine, but should be checked manually.

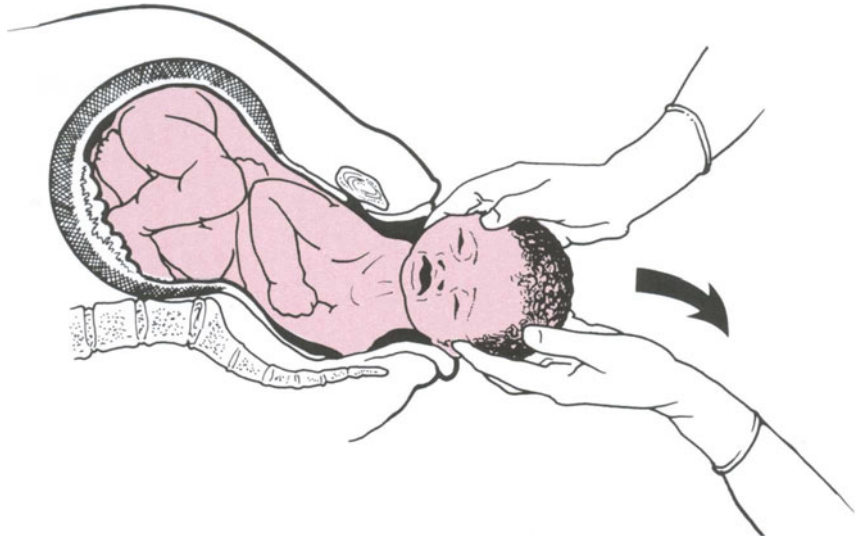
The liquor amnii which surrounds the foetus provides a shock absorber and protects the foetus from the full force of a contraction. A little liquor amnii may be in front of the presenting part of the foetus; this is called the forewater. The forewater also causes pressure on the cervix and can help the cervix to dilate.

The membranes may rupture spontaneously when the tension is very great during a contraction. In many units the membranes are ruptured artificially at the beginning of labour. This procedure encourages the onset of labour and is necessary if mother or foetus are at risk.

(b) The second stage of labour

This lasts up to an hour in a primigravid patient but is shorter in a multiparous patient.

The second stage lasts from full dilatation of the cervix until the foetus is completely expelled from its mother. The foetus is pushed into the vagina by the expulsive contractions of the uterus. The vagina, because it is distensible, allows the foetus to pass through. The vagina is able to distend because its



(a) Birth of the anterior shoulder. With the birth of the head, the shoulders reach the pelvic floor, and, directed by the levator 'gutter', rotate to lie in the antero-posterior diameter of the pelvic outlet. The head therefore rotates 'externally', or undergoes 'restitution', to its position at the symphysis. The anterior shoulder (in this case the right one) is appearing from behind the head by the midwife. The birth of the shoulder is aided by downward and backward traction of the head by the midwife.



(b) The birth of the posterior shoulder. The midwife aids the birth by lifting the head gently upwards whilst maintaining traction. This prevents damage to the perineum

Figure 3.4 The birth.

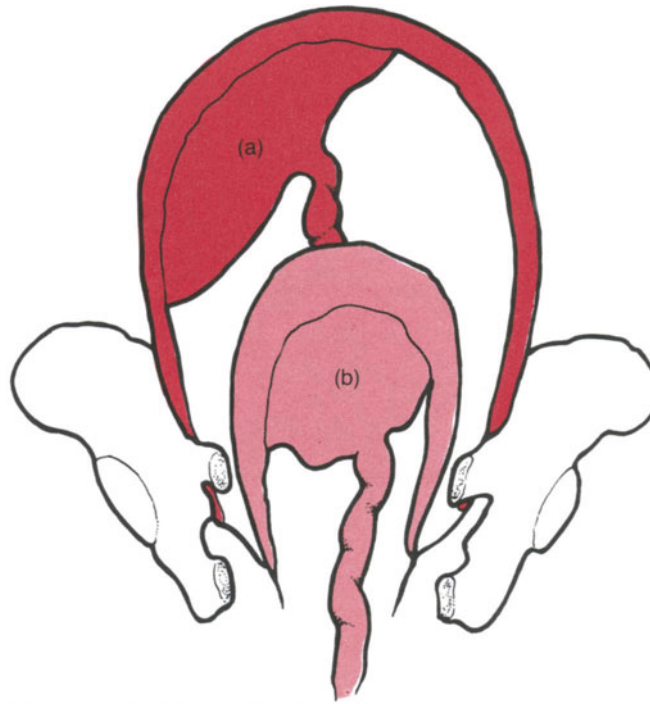
muscle fibres are mainly circular. The uterus rears up and the angle between the uterus and the vagina becomes straight, aiding the passage of the foetus. The pelvic floor through which the vagina passes opens rather like a sliding door; the rectum and bladder are taken up out of the way with the pelvic floor action. If the membranes rupture towards the end of the first stage of labour, the liquor cleanses the vagina like a sterile douche before the baby is born.

The foetus aids its passage through the vagina by turning and flexing itself to negotiate the angle of the pelvic cavity to the pelvic outlet. The midwife will assess the progress as the presenting part becomes more visible with each contraction. The maternal and foetal well being are continually assessed.

The birth of the baby is a wonderful moment which the attendants share with the parents. As soon as possible the baby is either laid upon the mother's abdomen or given into her arms; the parents can then see and touch their baby.

Parents wish to know if the baby is all right, what sex the child is and how heavy. The parents are told the sex of the baby and if the child is healthy, but the weight cannot be assessed at a glance, so that information is given later. All is not yet over.

The third stage of labour has to be managed very carefully to prevent post-partum haemorrhage. The uterus continues to contract and these contractions are aided by giving an oxytocic drug to the mother intramuscularly



(a) Placental relations before birth of the infant.
 (b) Placental relations after birth of the infant.

Figure 3.5 Diminution in size of the placental site after birth of the baby.

when the anterior shoulder of the baby is born. Syntometrine, a combination of Syntocinon and Ergometrine is the drug used in most centres. Oxytocic drugs cause contraction of uterine muscle. When the baby is born the uterus is able to contract, and the overall size considerably reduced. The available attachment area of the placenta then shrinks causing the placenta to separate from the uterine wall. The delivery of the placenta and membranes, and the control of bleeding, completes the third stage. One method of delivering the placenta can be by maternal effort; the mother pushes down into the vagina and the placenta is pushed out. The sign that the placenta has separated is indicated by bleeding. When the cord lengthens and the uterus rises as a hard round ball, this means the placenta has descended into the *lower segment*. Midwives may deliver the placenta by controlled cord traction. To perform controlled cord traction one ensures that the uterus is well contracted; a hand is placed behind the symphysis pubis to guard the uterus. The other hand secures the cord and applies gentle traction in the direction of the vaginal curve. When the placenta appears at the vulva, the midwife will take it in both hands and place the placental membranes and any blood loss in a suitable receptacle. The placenta and membranes will be examined carefully to ensure they are complete; the blood loss will be measured to ascertain the amount.

Throughout labour mother and foetus are carefully observed, ensuring progress is maintained. If there is any deviation from the normal, medical aid is sought. The midwife remains with the mother and tries to prevent the situation worsening. Records must be kept throughout the labour; these records will reveal a picture of the labour and its progress. Mother and father need each other's support, and support from the birth attendants. This is a very important time for them and they may be worried and apprehensive. A calm, caring and efficient midwife should enhance this occasion for the parents.

Care Plan for Mrs Hobbs, part 2: During labour

Mrs Sally Hobbs waved her two children Robert and Simon off to school after breakfast. During the morning she felt two minor contractions. Having had two children already, she recognised that labour was beginning and she began to make her personal plans.

At 1130 hours Mrs Hobbs noticed a 'show'. She remembered the parentcraft class teaching and telephoned the Maternity Home to say she would be coming in soon. Sister sent for an ambulance to arrive at her home at noon. Mrs Hobbs called her neighbour, Mrs Payne, who had promised to come in and care for Simon and Robert; then she rang Mr Hobbs at work. Mrs Hobbs arrived at the Haven Maternity Home and was escorted to the room where she would labour and have her baby. She was greeted by Sister Cross, who had cared for her throughout this pregnancy. The welcome involved a quiet discussion so that Sister could notice Mrs Hobb's contractions, both their frequency and strength. A general examination revealed that the blood pressure was within normal limits; likewise body temperature and pulse rate. Mrs Hobbs was asked to produce a urine specimen which was blood-stained from the 'show'. The urine was measured and tested and the results charted.



Sister Cross inspected Mrs Hobbs' abdomen, felt the baby, and made a vaginal examination so that she could tell Mrs Hobbs how long her labour was likely to be. The news was good.

The cervix was partially dilated and the foetal head had descended and was in a good position. Mrs Hobbs was delighted and especially when she was able to hear the foetal heart beat via the Sonicaid transistor. She was sure it was a female heart beat!

Sister Cross' questions revealed that Mrs Hobbs was constipated so a suppository was given and was effective. Mrs Hobbs was then encouraged to take a shower so that she felt fresh and full of anticipation. Mr Hobbs arrived just at the right moment. He was pleased because he could support his wife during the later stages of her labour. He had attended some of the parentcraft classes with her and so he was ready to encourage his wife to breathe deeply during her mounting and painful contractions.

At 1430 hours Mrs Hobbs felt like pushing, and so she climbed on to the bed with help, and accepted gladly the assistance of the gas for effective relief of pain and acquired oxygen by inhaling nitrous oxide and oxygen via the Entonox machine.

A second midwife, Staff Midwife Hunter, was called to give assistance. She warmed the cot, collected a delivery pack and opened it. There was an air of calm expectancy and a feeling of teamwork — and the baby's head was visible.

Sister Cross washed her hands, put on her gown and gloves, and everyone waited. Mrs Hobbs knew that her baby's arrival was imminent and Mr Hobbs reinforced Sister Cross' instructions. Together, with everyone's help, Melanie appeared. She slipped out of her mother and was laid upon her abdomen. Melanie cried; her parents stroked her and admired her intensely. She responded to their combined touch, and showed she had good muscle tone, good reflexes, and a healthy pair of lungs one minute after birth. Her cord was

clamped and cut and she was wrapped in a warm towel and handed to her ecstatic mother! Everyone talked to everyone else and rejoiced together.

Sister's work would not be finished until the placenta and membranes had been delivered, but this took only a few minutes. Once Mrs Hobbs was dry and comfortable Sister Cross examined Melanie very thoroughly, watched by her parents. The purpose of the examination and the findings were made known to them both, and Mr Hobbs was amazed to know that Melanie's birth weight exceeded that of both Simon and Robert. Both boys were waiting to come and see their new sister, so Mr Hobbs went off to find them, and after school they appeared, and the first picture in Melanie's own personal album is that of a united family at her cot-side.

From the uterus to the mother's arms: The adaptation of the infant to extra-uterine life

(a) The establishment of respiration

The baby, who had been in the enclosed and protected world of the uterus, has to adapt very quickly to the new environment, outside the uterus. The majority of babies do adapt very quickly and there are few problems. An understanding of the physiology of respiration in the newly born enables the midwife to anticipate and prevent problems.

The first noticeable change is the establishment of respiration. The placenta acted as a respiratory organ before birth; from the time of birth the lungs must function as the respiratory organ. During the last few weeks of pregnancy, the number of alveoli increases, and surfactant is produced in a correct ratio to aid expansion of the alveoli and exchange of gases to take place easily by reducing the surface tension. There are many stimuli to the baby to encourage him to breathe. During his journey through the birth canal, as the oxygen supply is decreased due to placental and cord compression, the carbon dioxide level is increased in the blood.

In the *medulla* is situated the respiratory centre, which instigates the breathing mechanism in response to a critical level of carbon dioxide. The level of carbon dioxide is measured chemically by receptors in the cardiac arteries, and these receptors trigger the respiratory centre. Too high or too low a level of carbon dioxide will have the opposite effect and the respiratory centre will not respond.

The chest wall of the baby is compressed by the walls of the vagina; this causes the fluid which has filled the lungs prior to birth to be expelled through the baby's mouth and nose. Eighty-five per cent of lung fluid is expelled if the baby is delivered vaginally and there is enough compression of the chest wall. The remaining fluid is absorbed or expelled within 48 hours. A baby born by elective caesarian section may be slow to breathe because of low carbon dioxide levels and congestion of the lungs with lung fluid. Lung fluid will take a few days to clear in these babies and can cause respiratory problems.

When the baby enters the world he is immediately in a cooler environment. He is handled, and is further stimulated to breath by inserting a mucus extractor into the mouth and nasal passage to clear any mucus.

The baby usually gasps, and then gives a lusty cry and within a minute is breathing regularly, mainly abdominally. A good lusty cry is essential to produce the pressure needed to inflate all the alveoli for the first time. The pressure needed when one blows up a balloon for the first time can help us to understand the need for a good inhalation of air. The longer it takes before all the alveoli are inflated, the more difficulties will present.

If respiration is poor, the heart, circulation and central nervous system are affected; as each system is interrelated, the problems are increased.

Most babies cry lustily at birth and become pink as the oxygen content of the blood is increased.

The midwife assesses the baby's condition at birth with a score system which gives a maximum of two points for each of five criteria. Respirations should be regular with a strong cry to score 2; weak cry with irregular respirations would score 1; if respiratory effort is absent the score would be nil.

The respiratory changes instigate the changes in the baby's circulation.



(b) Changes in circulation

The blood flow to the lungs is increased as they inflate; this causes all the blood to flow from the right atrium to the right ventricle, none passes through the foramen ovale nor the ductus arteriosus. The pressure in the right side of the heart is reduced.

The blood returning to the left side of the heart returns at a higher pressure; this closes the flap over the foramen ovale, the blood is then pumped out through the aorta and passes the other end of the ductus arteriosus. The ductus arteriosus can now fibrose, because there is no blood flowing through it.

If the baby makes poor respiratory effort, the foramen ovale and the ductus arteriosus will remain patent for some time, and cause problems for the baby.

The remaining parts of the foetal circulation become fibrosed because blood flow through them has ceased. When these changes have occurred the baby will be pink, but his hands and feet may remain blue for a day or two. The changes can be scored by a scoring system. Heartbeat absent, nil; heartbeat under 100 score one; heartbeat above 100 score two. Colour, white score nil; pink with blue extremities, score one; colour pink all over, score two.

If baby's respiratory and circulatory changes have been completed satisfactorily, the muscle tone and reflex responses can be assessed. If muscle tone is limp, score nil; some flexion of limbs, score one; active movement of limbs, score two. Reflex is assessed according to response to touch. No response, score nil; a facial grimace, score one; a cry, score two.

This score system is called *Apgar Score* after its inventor Virginia Apgar. Most babies will score eight or nine after one minute. A score of five or less denotes the baby needs immediate treatment – oxygen must be given either by face mask or intubation, and a paediatrician must be called. Delay could result in death or brain damage. The causes of a low Apgar Score are mostly respiratory and may be due to hypoxia in utero due to placental compression, poor function, or premature separation. Drugs can also depress respiration.

The midwife or doctor will both examine the baby after birth for any physical or neurological abnormalities. The baby's movements are noted, any jerky movement or lack of movement may denote damage to the nervous system, in which case a paediatrician must be informed. The baby's reflexes are checked and should all be normal — the grasp, suck, swallow and walking reflexes are checked. The moro or startle reflex is assessed and should be present. The physical details of the baby are examined including testing for congenital dislocation of the hip. The baby must be examined thoroughly and any problems treated urgently.

Sign	0	1	2	Score
Heart rate	absent	slow (below 100)	over 100	
Respiratory effort	absent	slow irregular	good crying	
Muscle tone	limp	some flexion of extremities	active motion	
Reflex irritability (response to slapping soles of feet)	no response	some motion	cry	
Colour	blue, pale	body pink, extremities blue	completely pink	
Scored at.....mins after birth			TOTAL:	

Figure 3.6 The Apgar score sheet

(c) The absorption of nourishment

During life in utero, food has been absorbed from the maternal circulation via the placenta and cord. The foetus swallows liquor but has not used its alimentary tract for a digestive process. During uterine life it was fed continuously intravenously, now the baby is fed orally. It is obvious that baby cannot digest large amounts immediately, and his nutrition must be similar in content to the nutrition he received before birth.

The mother can supply the correct food in the correct amount to suit her baby, by her breast milk. The first milk from the breast is colostrum; this is a very special milk — it is rich in antibodies, and helps protect the baby against infection. It also contains *lactaferrin* which prevents *E. coli* from utilising iron. Colostrum also acts as an aperient, and clears the digestive tract.

It is instinctive for the baby to suck and swallow, and the baby should be put to the breast as soon as possible after birth when his instinct to fix to the breast is strongest. Delay can cause difficulty and the baby will have to be aided by the midwife. This can upset the mother who may well feel the baby is rejecting her.

(d) The physiology of lactation

A baby sucks on the nipple and the surrounding area. This causes the mother's pituitary gland to release prolactin and oxytocin. Prolactin controls milk production, and oxytocin makes the muscle cells around the gland squeeze milk into the ducts. Thus demand stimulates supply and the more frequent the demand the more streamlined the supply.

It is not only sucking which causes milk to trickle from the breasts — the sight or sound of a baby crying may have the same effect so that often the milk is flowing before the baby has the chance to suck. There are factors which slow down or mitigate against the flow of milk, e.g. frustration, fear, anxiety,

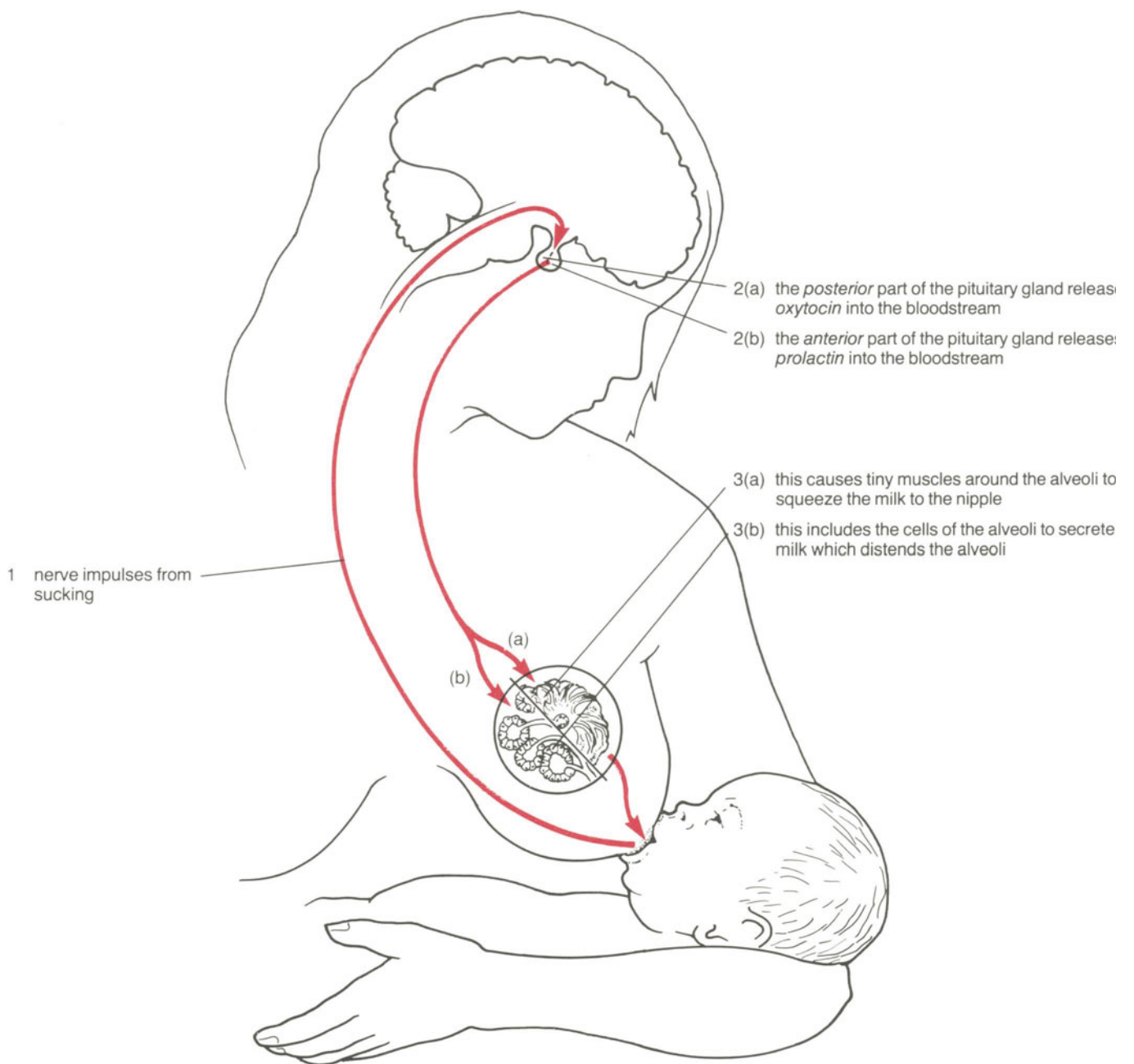


Figure 3.7 The hormones of lactation. (a) Oxytocin and (b) prolactin

embarrassment, discomfort. The midwife must try to eliminate these impediments. The mother who is able to enjoy breast-feeding her infant is the one who will be successful, and success in itself produces a feeling of well-being.

The baby will feed frequently during the first few days, until his stomach can accommodate larger amounts, and then he will usually demand to be fed at intervals of three to four hours. Each baby is an individual and will make his own regime if allowed to do so.

The baby's digestive tract is sterile at birth, and the normal flora of the gut are not established for some weeks. It is therefore essential to prevent pathological organisms invading the gut at this time. *E.coli* is an organism which carries a high mortality in babies. Colostrum in breast-fed babies helps to prevent *E.coli* establishing itself. Colostrum stimulates the enzyme system of the alimentary tract, establishes the acidity of the stomach, and forms a protective and selective barrier in the gut.

Breast milk is available at four days of age and by 10 days mature human milk and a good feeding pattern is usually established which will meet the baby's requirements for growth for the next few months. Most babies do not need anything apart from breast milk until they are six months old.

The baby will enjoy his feed if he is allowed to take it at his own pace. A certain amount of air is taken with the feed, and the baby should be winded before being laid down to sleep. If the baby is held in an upright position with support over the abdomen and back, he will burp quite easily. Vigorous back patting and rubbing is not necessary and can be distressing to the baby.

(e) The early physiology of the infant

The lower part of the baby's gut before birth was filled with debris, bile salts, fatty acids, lanugo and liquor. This material (called *meconium*) and also a changed stool both have to be passed before one can be sure that the alimentary tract is complete and working properly. Meconium may be passed at birth, but if it is not, it should be passed within 24 hours. If the passage of meconium is delayed, the bile pigments may be reabsorbed, adding to the workload of the liver and increasing the incidence of jaundice.

Delay in the passage of meconium should be investigated — a meconium plug, ileus or even an imperforate anus may be the cause. Fortunately most babies pass meconium quite soon after birth. The stool changes colour, black to brown and then yellow, as food is digested. The stool of a breast-fed baby is soft and yellow, and does not have an offensive smell. The breast-fed baby may be absorbing most of its feed and will pass few stools, but if his demands are more than his needs he will frequently pass stools. The stools of the baby fed on modified cows' milk will be a darker yellow, are more formed and have more odour. Once a changed stool is passed we know the alimentary tract is patent and the enzyme system is working. Stools that are offensive, very loose or green can denote a metabolic disorder, infection, or incorrect feeding.

The baby has passed urine whilst in utero and when born may pass urine immediately. The midwife should note when urine is passed, also that the urethral opening is normally situated and that there is a good 'stream'. The baby's kidneys may not cope with sodium and a brick dust deposit may be seen in the urine. The baby soon copes with the chlorides and this will disappear. If the urine flow is sparse, it may be due to insufficient fluid, fluid retention or urethral valve strictures; the latter two are rare occurrences.

Problems which may be encountered by a new-born baby include *hypoglycaemia*, *hypothermia* and jaundice.

Hypoglycaemia is more likely to occur if the baby is preterm, has been starved in utero, or is the infant of a diabetic mother. Early feeding helps to prevent hypoglycaemia; a dextrostix test is usually performed to detect hypoglycaemia in vulnerable babies, or if any baby is irritable. Hypoglycaemia can cause brain damage if not treated. A paediatrician must be informed.

Hypothermia is another danger to which babies are susceptible. Babies have a large surface area from which to lose heat, and a very small supply of heat as most food is used to promote growth. Babies are relatively inactive, and are unable to prevent heat loss by restricting the surface circulation; they do not shiver. Their heads lose a lot of heat because they have very little hair to prevent loss. Mothers should be advised of the dangers of hypothermia — advice should include: heating by night and day; position of cots and prams away from draughts; clothing; and bathing. If baby feels warm to touch he is all right.

Many babies develop a physiological jaundice. Before birth the baby has excess red blood cells and a high haemoglobin in order to utilise oxygen efficiently. After the baby is born he doesn't need so many red blood cells and the excess is destroyed. The end product, *bilirubin*, has to be conjugated by the liver. The baby may have too much bilirubin and the unconjugated bilirubin remains in the circulation and is seen as jaundice. Physiological jaundice reveals itself at approximately three to four days of age. Prevention is by early feeding, and if jaundice occurs, extra fluid is given. A serum bilirubin is taken and if this is at a high level for the baby's gestation and weight, *phototherapy* will be used.

Phototherapy uses light in the white range and this makes the bilirubin water soluble so that it can be excreted. The baby is nursed naked under the light, with his eyes protected by a mask. The parents will worry about this treatment unless it is explained to them. The mask should be removed from the baby's eyes when he is fed by his mother, to facilitate eye-to-eye contact. Jaundice may occur as a result of blood incompatibility or *rhesus antibodies*. In such cases the onset of jaundice is within 24 hours and can be predicted in many cases. Exchange blood transfusion may be necessary for these babies if the serum bilirubin level remains high.

Jaundice which is late, appearing after six days, may be due to metabolic causes, breast milk jaundice, or infection. The cause must be diagnosed and treated. The jaundice can be treated by phototherapy.

Breast milk jaundice is not dangerous but jaundice for any other reason, if it causes excessive levels of serum bilirubin, can lead to *kernicterus*. Kernicterus occurs when the basal ganglia of the brain are stained with bilirubin and brain damage is severe.

The baby breathes, eats and sleeps, he moves and cries, and he also wishes to learn about his new environment. The new baby sees and dislikes bright lights, and he responds to an object moving about 16 inches from his face. If the moving object is the same person the baby will recognise that person, and will imitate facial movements after a few days. It is important that the same person — his mother — is the person mostly in contact with him.

The baby will begin to recognise her, and he can also recognise the smell of his most constant attendant, especially if this person is his mother and she is breast feeding him. He will turn to her when he smells her and this response from him causes the mother to respond to him and his needs; each then stimulates and increases the other's responses. The baby's sense of taste is bland tending towards sweet. The lips and the mouth are his most sensitive parts and his needs should be satisfied for food and sucking comfort. Failure to satisfy these simple needs can lead to distress. The baby does not understand reason, only needs. He responds to noises, having been accustomed to an orchestra of soft sounds in the uterus. Hard, sharp noises cause distress. The baby finds the soft high pitch of the female voice most appealing. Most parents respond instinctively to the baby's needs; they hold him firmly but gently and bend close to him to bring their face into his range of vision. Men alter the pitch of their voice when talking to babies. These natural adaptations to parenthood should be encouraged.

The midwife and other attendants talk to the babies in their care, and parents can imitate their behaviour without feeling foolish. The baby belongs to the parents. This is an important fact which must always be remembered. The sooner parents and baby are a unit, responsible and confident in each other, the better.

Adaptation to motherhood

(a) Bonding

Many mothers, even though they are tired after labour, find it difficult to sleep during the first few hours after the child is born. They are excited and want to know more about the child carried for nine months in the uterus. Most mothers delight in the astonishing strength of the child's sucking reflex, and in the gentleness of the tiny hand which closes around the mother's finger. As she strokes the velvety skin the child opens his eyes and mother and baby gaze at each other. Thus a new relationship begins and once established it can be shared with the family, introduced like a new individual strand into a complex design. The family life will never be quite the same again. For many days,

weeks or even months, the parents' sleep pattern will be disturbed in order to accommodate a demanding infant. Fortunately a mother appears to have reserves of energy at a time when her body is shedding redundant muscle fibres and fat deposits, and when as a result of the preparation which began at the time of conception, it is producing nourishment for a rapidly growing infant.

The *puerperium* is that period of time in which the genital organs return to their pre-pregnant condition. This takes from six to eight weeks. The changes are governed by the hormone levels, i.e. chorionic gonadotrophin, human placental lactogen, oestrogen and progesterone.

(b) The uterus

This decreases in size rapidly after the expulsion of the placenta and membranes, and continues to involute about 1.6 cm (a finger breadth) a day until by the 12th puerperal day it is below the level of the symphysis pubis.

Enzymes break down the muscle fibres into soluble products which are removed by the blood stream. During the first 24 hours following delivery, the mother produces a diuresis.

(c) The placental site

This also contracts rapidly, superficial tissue is shed and a new epithelium covers the area. For the first few days after the birth of the infant, the mother discharges *lochia* from the genital tract which consists mainly of blood from the placental site. Later, it contains leucocytes and decidua, and becomes reddish brown in colour. The quantity of lochia varies from day to day and is increased if the placental site has been large as in multiple pregnancy, or if portions of the placental membranes are retained.

In the uterine cavity lochia is sterile, but becomes contaminated with organisms in the vagina, and has a characteristic smell. These organisms multiply and can be found in the uterus on the fifth day. Infection rarely occurs because of the new epithelium which forms a barrier. Infection may occur if the tissues are poorly nourished, if labour has been traumatic or if the organisms are particularly virulent.

(d) The cervix

After delivery the cervix is patulous, bruised and admits 2–3 fingers; this reduces still further but it does not regain its pre-pregnant state.

(e) The vagina and vulva

Following delivery, the vaginal wall is swollen, bluish and pouting. It quickly regains its elasticity, but the mucosa remains sensitive for several weeks. The perineum, which is either overstretched or cut, has an excellent blood supply and by the seventh day of the puerperium looks relatively normal.

(f) The urinary tract

There are three factors which influence the urinary tract in the first few days following delivery.

1. A marked diuresis due to cell metabolism.
2. A fall in the progesterone content of the blood.
3. The irritation of the pelvic floor muscles during delivery suppresses the activity of the detrusor muscle of the bladder.

This may produce difficulty in micturition. In most patients physiological dilation is resolved in the six weeks after childbirth.

(g) Blood changes

Nature prepares the mother for the third stage of labour by raising the level of some clotting factors in the blood. During the first few days following delivery these levels decrease, but for the first 14 days of the puerperium the coagulability of blood is such that there is an increased risk of thrombosis. Blood volume declines and reaches the normal non-pregnant level by the 40th day.

(h) Ovulation and menstruation

Among those women who breast-feed frequently, ovulation is delayed for about 20 weeks. Those who choose not to breast-feed may ovulate and become pregnant without any menstrual episode, within 10 weeks.

Care plan for Mrs Hobbs, part 3: During the puerperium

Mrs Hobbs, aware of the hard work involved in caring for a new baby, had elected to remain in hospital for at least one week following confinement. The two boys, Robert and Simon, visited her for a short time each day after school, and Mr Hobbs called in each evening. Mrs Hobbs, at her own request, had Melanie with her all day and most nights. She found this both rewarding and convenient. Melanie demanded a feed frequently by day. At night, Mrs Hobbs found she needed to be relieved of some milk and was glad that Melanie awakened around 0300 hours.

Sister and Mrs Hobbs had a discussion each morning.

Sister observed that Mrs Hobbs was delighted with her daughter and each day she had some new detail to relate. Mrs Hobbs' general health was good, and temperature and pulse rate were within normal limits. The uterus was involuting well and lochia was diminishing. Diuresis was good during the first 48 hours, and subsequent urinary output was normal. The bowel was active and a previously painful haemorrhoid had subsided. Mrs Hobbs was encouraged to participate in exercises designed to improve muscle tone. Ankle oedema had disappeared and she was free from varicose veins. On the third day, a blood sample was taken for haemoglobin estimation. This was found to be within normal limits. Melanie, like all babies, demanded attention. The GP had examined her and pronounced her fit. Melanie was without blemish. She cried when hungry or uncomfortable. The sticky meconium stools had changed to a loose yellow consistency — normal among breast-fed babies. She passed urine frequently.

Mrs Hobbs enjoyed watching Sister bath Melanie — using her as a model for a demonstration for other mothers-to-be.

On the fifth day, Mrs Hobbs was feeling weary, having had a disturbed night. With Sister's help she transferred to a side room and slept for several hours. Sister, on her round in the community, called on Mrs Hobbs senior and advised her against calling with the children that afternoon.



Later, Mrs Hobbs woke refreshed, had a bath, fed Melanie, enjoyed the attention of the local hairdresser and looked radiant when a slightly worried Mr Hobbs visited that evening. Mr and Mrs Hobbs made an opportunity to discuss with Sister the possibility of Mrs Hobbs being *sterilised*. They had decided that three healthy children were enough for their family. Sister advised them to discuss the matter with their GP. She indicated that hospital admission would take about six months to arrange, and suggested methods of contraception which they could consider in the meantime. Sister agreed to inform the GP of their decision, and made a suitable record in Mrs Hobbs' notes.

Sister told them of the screening tests (for *phenylketonuria*, for example) which would be undertaken on Baby Melanie, prior to her transfer home on the seventh day.

Arrangements for Mrs Hobbs' transfer home were made. Mrs Hobbs senior who lived nearby would continue to do the shopping and the washing until Mr Hobbs' holiday was due in two weeks' time.

(a) Mrs Hobbs' transfer home

The preparation for the advent of another child in the Hobbs household, which had begun soon after conception, proved valuable. The household was welcoming and warm, Granny had arrived to help, and the two boys, already well acquainted with their sister, went with father to the Maternity Home to collect mother and baby.

Sister Cross had notified the District Medical Officer of the baby's birth, and Mr Hobbs had proudly registered the birth of his daughter, now known officially as Melanie Jane Hobbs.

Mrs Hobbs had the certificate of confinement which would enable her to collect the state benefits.

Mrs Hobbs was well. She continued to enjoy a normal diet, and was glad to be free of household chores for a week. She had learned to take short naps during the day, in order to make up for lost sleep at night. Her haemoglobin was within normal limits, the lochia had diminished to a small amount of brownish discharge. The bowel and urinary tract gave no problems. Mrs Hobbs, having ceased to smoke during pregnancy, had resolved to do without cigarettes in the future. Daily exercises were helping to restore muscle tone and she resolved to find time to attend the local slim and trim club. The uterus had *involved* satisfactorily.

Mrs Hobbs had a plentiful milk supply for Melanie who continued to demand feeds at relatively frequent intervals. Mother and baby were comfortable with one feed during the night (between 0300 and 0400 hours) with another just before 0700 hours. For about 48 hours Mrs Hobbs had used nipple shields but these were no longer necessary. Feeding times were pleasurable moments of close companionship. After the first few minutes of vigorous sucking, Melanie appeared content to gain greater knowledge of this provider of sustenance and sensory contact. These precious moments helped to strengthen the bond between mother and daughter. They learned to communicate with each other.

Melanie regained her birthweight by the eighth day. Her cord had separated the previous day, leaving a clean, dry site. Her skin remained smooth, urinary output and alimentary tract gave no problems apart from inconvenience. The *Guthrie test* had proved negative.

Sister Cross was aware that despite the outward normality of the situation, Mrs Hobbs had a real fear that one day she would wake to find her baby dead. It was not an uncommon nightmare. Sister Cross discussed this with the health visitor, who knew the family, and together they arranged to visit the family weekly during the first month. A postnatal check by the GP was arranged for six weeks later.

The health visitor had some advice to give Mrs Hobbs about such mundane topics as detergents and recommended a pure soap powder, which would not irritate the baby's skin.

The subject of the developmental paediatric assessments was introduced, the topic of immunisation was also mentioned and the problem of the pertussis vaccine was put into context.

Mrs Hobbs returned to the Maternity Home's Mother and Baby Club once a week. She found it encouraging to meet other mothers. Best of all she enjoyed pushing the pram across the park to the boys' school in time to meet them for a family 'date'.



It may seem strange to consider infertility and contraception in the same context, but the emotions and the same organs and processes of the reproductive tract must be considered whether one is caring for the infertile couple or those seeking to prevent conception.

Infertility

The primeval urge to reproduce is stronger than the global concern of over-population. Society anticipates a couple's ability to conceive, and a woman's eagerness and ability to carry a pregnancy to a successful conclusion. Men and women, even those who profess indifference about rearing a family, are usually anxious to prove reproductive success.

Old wives' tales suggest that failure to conceive and produce the next generation deserves jokes and ridicule. This demonstrates attitudes of failure, censure, inadequacy and inability to meet the challenge of life. Unhappiness, despondency and feelings of failure may result, and need to be recognised and worked through. Mental and physical relaxation are in themselves therapeutic. For some, *hypnosis* is the answer.

(a) Definition and incidence

Infertility is the inability to produce a pregnancy after a year or more of sexual relations during which no forms of contraception are used. Primary infertility is the term used when no pregnancy has occurred. Secondary (or relative) infertility is that which follows one or more successful pregnancies.

(b) Aetiology

In order for fertilisation and implantation to occur, the ovum and sperm should be healthy, the passage through which they travel must be clear and effective, and the environment conducive. Consequently the causes of infertility are many and varied.

(c) Factors relating to the woman

1 Endocrine problems and care

The *pituitary gland* is vital to ovulation. It may be over-active, which is *hyper-pituitarism* or under-active, which is *hypo-pituitarism*. Tumours may interfere with the secretion of the necessary hormones.

The *ovaries* may fail to produce ova, i.e. anovulation, or the ovum may be unhealthy. They may be inefficient as a result of infection, tumours, premature failure or polycystic disease.

This double endocrine organ tends to be called the *pituitary gland* by physiologists and clinicians, and the *hypophysis cerebri* by anatomists! It lies almost exactly at the centre of the head and weighs about 600 mg

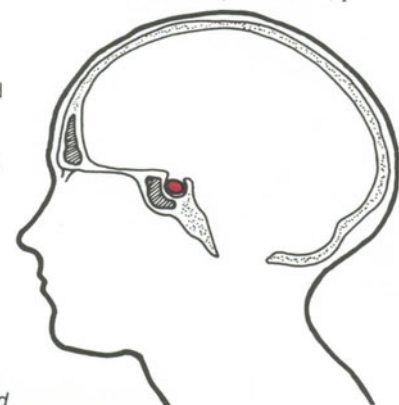


Figure 4.1 The position of the pituitary gland

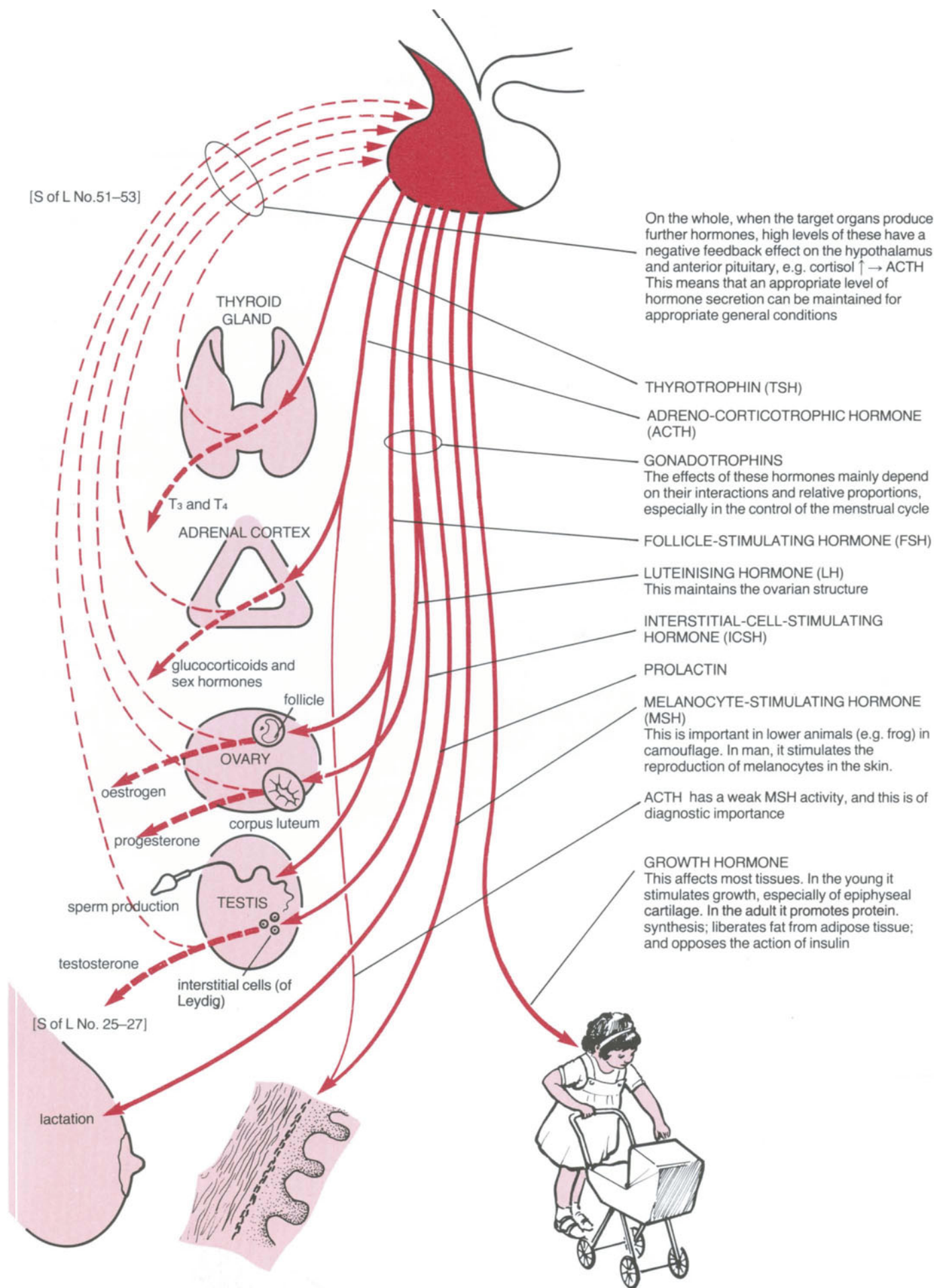


Figure 4.2 Hormones produced by the anterior pituitary

2 Polycystic disease

This is not particularly common and spontaneous correction may occur. Some patients who have had four to five years of amenorrhoea respond satisfactorily to medical treatment. Ovulation often occurs within a few days of a course of Clonophid. Surgical intervention may be used to stimulate the *hypothalamus*. A wedge resection of the ovary reducing the ovarian tissue by approximately 50% reduces also the production of androgens (and oestrogens), thus reducing the feedback stimulus to the hypothalamus. There are conflicting opinions on the rationale and efficacy of this procedure but it has held its place in the gynaecologist's repertoire for nearly 40 years.

3 The Fallopian tubes

These may be partially or completely blocked following infection by streptococci, spirochaetes or the Koch's tubercle. The laparoscope is used to ascertain the site of the problem, and once located, an opening is made in the tube, i.e. salpingostomy. There may be mechanical, structural or endocrine difficulties.

4 Cervical factors

Since the spermatozoa must penetrate the cervical canal and avoid being trapped in its clefts, the cervix has long been considered a major factor in infertility. The alterations in the cervical mucosa caused by cystic release of oestrogens and progesterones are very important.

(d) Factors relating to the male

1 General health

Poor nutrition, systemic disease, smoking, excessive alcohol and emotional tension may all affect the ability to impregnate.

Specific causes may be related to: sperm production; sperm motility; sperm transportation; and sperm deposition.

(e) Problems relating to both partners

These can be immunological, or due to infrequent sexual relations or faulty technique.

It is usually the woman who first seeks advice and in itself this can be an emotionally and physically demanding experience. The nurse/midwife/health visitor working in the community is often the person whose advice is sought. He/she is the professional who has the best opportunity to assess the patient's life style and health habits.

(f) Interview environment

It is essential to create an environment which suits those who are to be interviewed. Privacy is important and time a vital ingredient.

(g) Information required

A picture of the whole patient is necessary. Like pieces of a jigsaw puzzle, each facet of information is important both in itself and for its contribution to the total situation. An account of past illnesses and operations may help to identify mechanical, structural or endocrine problems, in both male and female. A detailed analysis of menstrual pattern and of sexual behaviour (including coitus technique) should indicate, to some extent, the possibility or otherwise of a pregnancy ensuing.

The social habits of the couple and their attitudes to sex are important.

(h) Physical examination

An indication of general health may be obtained from the following:

1. An X-ray of the chest.
2. An examination of blood and urine.
3. An estimation of blood pressure.
4. An assessment of height, weight and general appearance.

Special investigations will involve an assessment of endocrine activity from:

1. An X-ray of the skull.

2. A hormone profile — male and female.
3. *Vabra curettage*.
4. Dilatation and curettage.

Tests which will demonstrate patency include:

1. *Tubal insufflation*.
2. Laparoscopy — a dye (Methylene Blue) is injected into the cervix.
3. *Hysterosalpingography*.

Tests which will indicate the health of the environment include a *cervical smear*.

(i) Care of patients

An essential ingredient of care is the ability to appear to have both the time and the willingness to listen. Lack of time, too little preparation or inadequate information are the recipes for disaster.

The patient will require an explanation of the reasons for tests, and time to consider them.

The side effects of investigations are important, e.g. the patients may not be fit to drive themselves home at the end of an out-patient session, and therefore they should be advised not to bring the car. The date and time when results are likely to be available is all-important to an apprehensive couple, and again time to give an explanation which is adequate for the recipients is essential.

(j) Alternatives for infertile couples

1 Artificial insemination

This is the introduction of sperm into the vagina by means other than sexual intercourse. There are two types:

1. AIH = Artificial insemination by husband.
2. AID = Artificial insemination by donor.

The Catholic Church, in particular, is opposed to this method of fertilisation, and sanctions neither, while the Anglican position is to accept AIH but not AID. Orthodox Judaism opposes AID and only permits AIH after a number of years' marriage without conception. Most Protestant denominations are either non-committal or opposed to AID. Muslims and Hindus have been influenced by Western culture. Muslims tend to regard AID as unacceptable but AIH as being preferable to childlessness. Hindus believe that nothing should be allowed to interfere with the will of God, but they are concerned with the question of inheritance, and for some AIH would be acceptable.

2 Fertilisation in vitro

This is implantation into the uterus of an ovum fertilised in the laboratory. It is a technique which has taken years to develop and which has been successful recently. Social and ethical problems may arise, and the near future will show many developments in this field.

There is, of course, a legal aspect to this development. The law of negligence applies to this procedure as to any other. However, there is no way to ensure that all the sperms used in the insemination are genetically sound and the possibilities of birth defects exist in the same proportion among women inseminated artificially as with those impregnated conventionally.

In 1971 the British Medical Association (BMA) recommended that AID be offered by the National Health Service and that frozen semen banks be set up. A service of this type has been offered by the British Pregnancy Advisory Service since 1979.

In law the child of a married woman is presumed to be that of the husband as long as he is 'within the four seas'. Given the confidential nature of AID there is no difficulty in the husband being accepted without question as the father of an AID child when the birth is registered.

3 Adoption

The couple must apply to an adoption agency, who will decide over a period of time which applicants are suitable to become adoptive parents.

Subsequently the agency makes a thorough study of each child and the prospective parents, in order that:

1. They are able to make the best possible match of child and prospective adopting family.
2. The prospective parents can be told as much as possible about the child they might adopt.
3. They can ensure that the prospective parents understand and agree that the adopted child has the option to learn of his/her origin if he/she wishes.

4 Childlessness

The adjustment period of childlessness varies with each couple, who will need guidance and understanding throughout.

A stable, happy couple who have maintained a rich relationship during the investigation period will come to terms with the situation and adjust their lives accordingly. The wife can continue working or pursue a new career. A full and happy life is still possible.

Further reading on infertility

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Reproduction 2, Systems of Life No. 26, Nursing Times, London, 1977.

SELF TESTING QUESTIONS

Q1. What is meant by the term *Vabra Curettage*?

Q2. Consult the ward procedure book and witness the procedure in the out-patient department. Then reflect on how you would prepare a patient for this procedure.

Q3. A hormone profile. What does this mean for the patients, the doctor, the nurse and the support service staff?

GUIDELINE

Consult Walters, W. and Singer, I. (eds), *Test-tube Babies: A Guide to Moral Questions, Present and Future Possibilities*, OUP, 1982.

Care Plan for Mr and Mrs Tom Smith

(a) Milestone 1

24 January 1981. Mr and Mrs Smith decide to seek advice regarding their failure to have a second child. Jane is now four years old, and is their only child. She goes to play-school, and Christine Smith has time on her hands. Tom Smith is an engineer, and would like a son to follow in his footsteps. An out-patient appointment took a month to arrange.

The objective of the receiving nurse is to create an environment in which Mr and Mrs Smith are secure, comfortable and anxiety-free. Sister Potter therefore anticipates this young couple's arrival and welcomes them into a private, comfortable interview room, and talks to them until she can formulate a word picture of Mr and Mrs Smith and their needs.



1 The nursing history

Christine and Tom have a 'middle-class' family life, no financial problems and a happy marriage of eight years' standing. Jane is a bright healthy child. They have no health problems apart from secondary infertility. Neither parent takes drugs, nor have they taken any contraceptive measures at any time.

2 The medical story

The consultant meets Christine and Tom. Christine is prepared for a full examination and a blood test.

3 The objectives of the consultant gynaecologist

These are to talk, to examine and to advise. Dr Bright discovers that Christine is healthy and that her Hb is 12.8 g. She has no obvious pelvic abnormality; the cervical-smear test appears normal. Dr Bright suggests that further investigations should be carried out, some of which Christine and Tom can undertake immediately.

(b) Milestone 2

The objectives are to discover:

1. Whether ovulation is taking place.
2. When ovulation is occurring.
3. Whether Christine's cervical secretion will allow the passage of the sperm.
4. Whether Tom's sperm count is adequate.

Sister Potter explains to Tom and Christine that a record of body temperatures, taken daily, will help to demonstrate when ovulation occurs.

The use of the chart and thermometer is explained and both are given to the couple with a written explanation.

The young couple are advised that an illness of any sort, e.g. a cold, could influence the temperature and thus this should also be recorded. Sister also explains that the need for further investigation of blood, e.g. the level of progesterone in the blood will indicate that ovulation has occurred, but this sample must be taken between the 21st and 24th day of the cycle. The blood is also examined for other hormone levels, e.g. prolactin, thyroxine, luteinising hormone, follicle-stimulating hormone.

Sister Potter then explains the reasons for examining the seminal fluid and written instructions are given.

Christine and Tom appear slightly bewildered because so much is being done for them and their problem.

Sister advises that the results take some time to come through and depend upon the assessment of a 28-day cycle, which means that further appointments will be at intervals of two to three months.

(c) Milestone 3

Christine and Tom return to the Out-patient Department to learn the result of the investigations, and they are told that they are normal. The sperm count is low but still within normal range.

Objective

To reassure, to advise and to explain the next step, i.e. to discover whether Christine's Fallopian tubes are patent.

Dr Bright explains that an investigation, called a 'laparoscopy', is a very common procedure, and one which allows the doctor to view the tubes through which the ovum must pass. Dr Bright indicates the disadvantages, i.e. a 48-hour stay in hospital, a general anaesthetic, a very small abdominal wound, and, a few months' wait for a hospital bed. Christine responded positively, Tom was more apprehensive. Both expressed the wish 'to get it over and done with'.

Sister Potter talked to Christine and Tom about an admission date. For the best results the laparoscopy with dye test and dilatation and curettage of uterus had to be done mid-menstrual cycle. Christine and Tom would have to make arrangements for Jane to stay with Grannie.

Christine's only other experience of hospital admission was for childbirth.

Three months later on the day on which Christine was to be admitted to hospital she telephoned Sister to say that she thought she might be pregnant. Sister arranged for a pregnancy test to be done and there was great excitement when this proved to be positive.

Christine's next visit was to the Antenatal Department, where she booked in to have her baby.

Control of fertility

While Mr and Mrs Tom Smith, and others like them, seek help because they want a second child, many responsible young couples seek the means of avoiding a pregnancy, and/or to plan the arrival of their children, and/or to limit their family.

Although no method of contraception is ideal, any method used regularly, and carefully, and which is acceptable to both partners, is likely to prove more successful than a so-called 'reliable' method used only when convenient and with minimal motivation. Thus it is wise when offering advice about contraception to see both partners and to give them time to discuss the method most suitable for them.

Briefly the possibilities are as follows.

(a) Methods which influence ovulation

This includes the use of oestrogen. Oral contraceptives usually contain oestrogen and progesterone. The combined action of these hormones causes:

1. The suppression of ovulation.
2. An alteration in the lining of the uterus.
3. The passage of the sperm through the cervix to be more difficult.

The Fallopian tubes, the cardio-respiratory system, breasts and blood chemistry are also affected by the use of this combination of hormones, and there is a risk of thrombo-embolism leading to death in some cases.

A 'mini-pill' containing progesterone only does not suppress ovulation and has a higher failure rate. It is useful for a woman who wishes to avoid conception during the months in which she is breast-feeding an infant.

(b) Permanent methods which prevent the passage of the sperm

These include female sterilisation and male sterilisation. Sterilisation of male and female is an effective method of controlling fertility and should be regarded as irreversible.

Vasectomy is a simple operation usually performed under a local anaesthetic. An incision is made on each side of the scrotum and a small piece of the vas deferens removed and the remaining ends tied. Since sterilisation by this method is not immediately effective, an alternative method of contraception is advised for 6–12 weeks.

For the woman the operation is less easy. The Fallopian tubes have to be crushed, coagulated by heat and clips applied to prevent fertilisation taking place.

- (c) **Methods which interfere with the embedding of the zygote** These consist of intra-uterine devices (IUDs). Intra-uterine polyethylene devices are of many shapes and sizes. The names by which they are known are in themselves descriptive and easy to remember, e.g. *Saf-T Coil*, *Lippes loop*, *Gravigard*. Skilled fitting is essential. The main advantages of the IUD is that once it is in place, the woman need take no further action except a monthly check to ensure that the threads attached to the device are still in position.
An IUD is best described as a good deterrent to pregnancy rather than a fool-proof method of contraception for the highly fertile.
- (d) **The use of a barrier, such as the condom and the cervical cap** The *condom* is a sheath of a fine rubber-like compound which fits over the penis and prevents sperm from entering the vagina. It is harmless, and reduces the risk of infection in sexually transmitted diseases. It is obviously only applicable to the male. Another type of barrier, used by the female, is the *cervical cap*, *vault cap* or *vaginal diaphragm*.
- (e) **The use of chemicals which act as deterrents** These are usually creams or jellies and are used in conjunction with cervical caps, and therefore add to the effectiveness of the barrier.
- (f) **Avoidance of the likely time of ovulation** The ovum disintegrates about three days after its expulsion from the *Graffian follicle*. In theory, therefore, conception is most likely during the three days following ovulation, and intercourse should be avoided during this period if a pregnancy is unwanted. Avoiding intercourse at the anticipated time of ovulation may be difficult or even impossible in practice.
- (g) **Withdrawal prior to ejaculation** This may be unwise and/or unacceptable.

For those anxious to avoid a pregnancy, from whom can help be obtained?

- (a) **From the Primary Health Care Team** In addition to the GP many health visitors, midwives and district nurses have received special training in family planning. There are also many family planning clinics, in cities and even in most small towns.
- (b) **Hospital out-patient clinics** These provide clinical expertise for those requiring surgical intervention, and also for those who are medically 'at risk'.
- (c) **Chemists** They dispense oral contraception, and also sell barrier creams and condoms.
More and better facilities are needed for the disabled, the mentally ill and those who have psycho-sexual problems.

Further reading on fertility

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- Sai, F.T. *Defining Family Health Needs: Standards of Care and Priorities with particular reference to family planning*, International Planned Parenthood Federation, 1977. This gives a brief view of worldwide needs.
- Askham, J. *Fertility and Deprivation*, Cambridge University Press, 1975. A study of the relationship between social class and fertility.

The family; financial considerations and society

(a) What is a family?

Conception, pregnancy and childbearing are events that have dynamic effects upon the new parents, their own relatives and friends, and they may also have implications for local authority resources. There are many cultural and psychological variables that may affect the acceptance of a new baby within a family. They include:

1. The stability of the relationships between the new parents, and their roles within this relationship.
2. Other children in the family, and the spacing of these children.
3. Relationships between the new parents and other members of their families, particularly their own parents.
4. The ability of the family to adapt to a changing situation.
5. Emotional and physical maturity of the new parents.
6. Expectations for childbearing and parenthood for the couple.
7. Childhood experiences of the new parents.
8. Previous experience with babies and young children.

There are two basic forms of family — the extended and the nuclear.

In the extended family three (or even four) generations of the family live together or in very close proximity to one another. The oldest member of the family is generally respected by all and consulted on family matters. Children are brought up within the family community with aunts, grandparents and parents all playing a part in the care and rearing of the children.

The nuclear family comprises a maximum of two generations living together. This may be a couple on their own or with children, or may be a single parent with a child or children. There is frequently geographical or social distance between the couple and their parents, and the number of children within the family tends to be small. Increasingly the 'grandparent' generation all have their own jobs and interests, with they and their adult children leading independent lives. Family ties may vary from strong, loving links to loss of contact between family members. People brought up in an extended family may well have more experience with childbearing and child rearing than those in a smaller, nuclear family. There is a tendency for some family cultures to pass from one generation to another; for example, a child who has been ill-treated has a greater tendency to ill-treat his own children than the norm.

(b) Financial considerations

There are a number of practical considerations that may also affect the dynamics of the family into which a baby is to be born. These include: finance; housing; employment of the expectant mother; and clothing and furnishings for the baby. The National Health Service ensures that the following are available to all women who are resident in Great Britain: medical care from a GP; consultant care, if necessary or desired; midwifery care at home or in hospital; and health visitor services. This includes all medical investigation services and also free dental care and prescriptions during the pregnancy and for one year after the birth of a baby.

Most expectant mothers are entitled to a lump sum payment — the maternity grant for any baby born after 28 weeks' gestation. (In the case of a multiple pregnancy one maternity grant is paid in any case, with a further grant being made for any further babies surviving for more than 12 hours.) Claims for this grant are made on Social Security Form BM4, which is obtained from the GP, midwife, maternity unit or social security office. The completed form has to be sent to the local social security office between the 26th week of pregnancy and 13 weeks after the birth of the baby (see Figure 5.1). A minimum amount of

Weeks of pregnancy and after delivery										
1	2	3	4	5	6	7	8	9	10	Form BM4 completed and signed
11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30	Expected date of delivery
31	32	33	34	35	36	37	38	39	40	
41	42	43	44	45	46	47	48	49	50	Latest date for claiming grant
51	52	53	54	55	56	57	58	59	60	

Figure 5.1 Calendar for claiming maternity grant and maternity allowance

national insurance contributions has to have been paid by either the husband or the wife (for a single woman only her own contributions are taken into consideration). Child benefit (a weekly allowance) is paid to the mother of any child under the age of sixteen who is living at home or is temporarily away from home. Maternity allowance (a weekly paid pension) is paid to a woman who has made a minimum number of national insurance contributions within the limited period prior to making a claim for the allowance. This enables working pregnant women to give up work in good time prior to the birth of a baby and for a period after delivery. Claims are made on form BM4 between the 26th and 29th week of pregnancy. Payment is made for 18 weeks from the 29th week of pregnancy provided the mother is not working nor receiving certain other national insurance benefits (see Figure 5.1). Earnings-related supplement may be added to the maternity allowance. For the amount of allowance payable, see the current social security benefit list.

Full-time employees taking maternity leave (and some part-time employees) may return to their employment and receive 6 weeks' maternity pay provided that they:

- have been in full time employment with the same employer for two years (or at least 8 hours work a week for five years part time);
- continue in employment until at least the 29th week of pregnancy;
- give the employer a minimum of three weeks' notice before leaving that they intend to return to work after delivery;
- return to work within 29 weeks of delivery, after giving the employer one week's notice of return to work (see Figure 5.2).

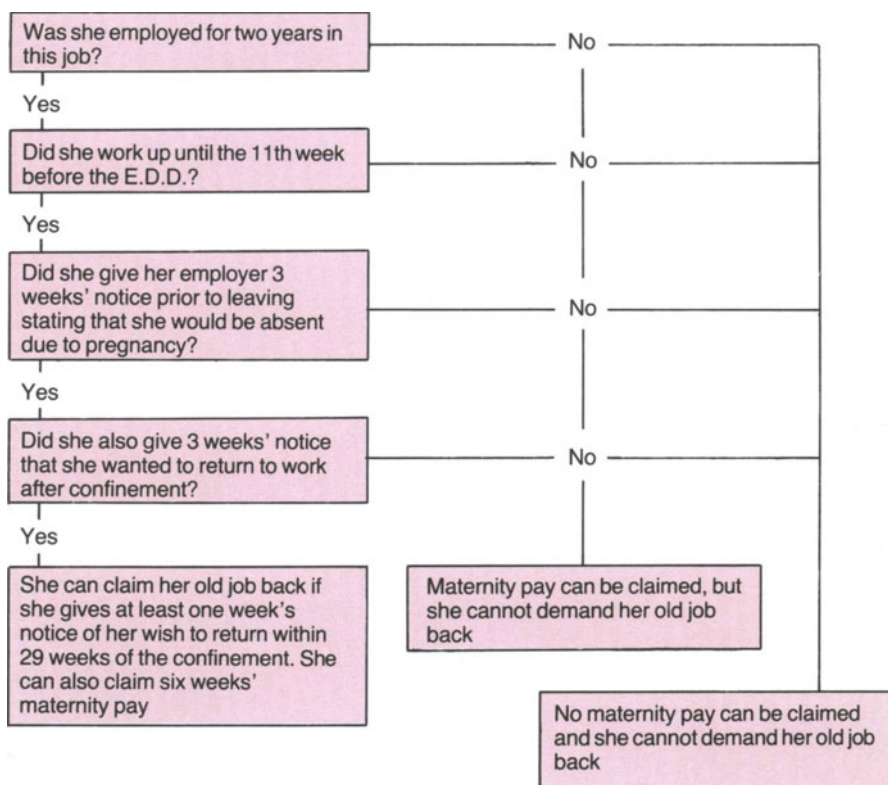


Figure 5.2 Conditions for claiming maternity benefit and returning to work. Note that the mother's rights depend upon proper notice being given to her employer

The cost of clothing and equipment necessary for a baby can be considerable. It may be possible to buy some clothing and equipment second-hand from advertisements in local papers, shops, clinics or from the local radio. For many couples expecting a baby, family and friends may give certain items, particularly for a first baby. For your own information it is worth working out the cost of a basic layette and such equipment as a baby bath, cot, bedding and pram by visiting a local baby department or store.

(c) The society

The society into which a baby is born will be affected more by the volume of births and the balance of births and deaths (gross population) than by the birth of the individual baby, in most cases. Occasionally, when a family has problems, or if the new baby is disabled or chronically sick, the resources of the society may be directly affected.

Alternative child-care services may occasionally be required — adoption, fostering, nursery care or later play groups, special educational facilities, nursery school. These alternatives to care within the family are provided or supervised by the local authority social services department, or, in the case of educational facilities, the education department. They are financed both from taxes and rates. National Health Service facilities are available both for the mother, during and after her pregnancy, and for the baby if necessary. These facilities will be used to a greater or lesser extent for the birth of most babies. Financial benefits are outlined on p.40. Both the health and social services benefits are financed from taxes and the national insurance contribution paid by employees and employer.

Later, educational resources will be required for the growing child. These, too, are financed by rates and taxes that originally came from the population at large. Eventually the financial burden upon society becomes an asset, as the child grows into adult life and enters the working population.

In three of the following family studies the interaction between the pregnancy and birth and the institutions of society can be seen, with fostering (study 2), adoption (study 3) and special educational facilities (study 5). Each, however, would affect the society into which the baby was born in almost indefinable ways.

Five family studies

(a) A planned pregnancy

Helen is aged 22 and is a secretary to the manager of a local firm. She has been married for three years to Patrick, who is aged 25 and a charge nurse in a psychiatric hospital. Helen has two younger sisters and both parents have full-time employment. Patrick, an only child, has a widowed mother who is also



nursing. Patrick and Helen live many miles away from their parents and have deferred a family whilst furnishing their home and cementing their relationship with one another. They have some shared activities as well as their own hobbies, with a wide sphere of friends. Conception occurred four months after Helen stopped taking the contraceptive pill, her menstrual cycle re-establishing itself well prior to conception. Apart from a period of nausea in the evenings during early pregnancy, Helen was well. Patrick and she were aware of possible mood swings and changes in libido and both tried to compensate for these. They found that a deeper, cherishing relationship developed.

After the birth of Charlotte the first three months presented some difficulties. She was a baby who tended to sleep during the day and be wakeful and fractious at night. Due to Patrick's shift work Helen felt very alone and inadequate at times, which was compounded by sleepless nights. She felt tired, seeming to be tied to a round of feeding, changing and pacifying Charlotte and trying to keep up her usual high standards of housework. Both Patrick's mother and her own parents visited for a few days, helping with chores and allowing Helen some respite. Patrick, too, was very supportive and friends helped with babysitting, in order that Helen and Patrick could get out for the occasional evening.

Gradually Patrick and Helen adapted to the advent of Charlotte, and found great pleasure in her progress. As they were able to get more rest, their normal sexual relationships were resumed and they found that the new relationship that had developed during the pregnancy deepened. They were very grateful for the supportive help from their family and friends during the period of adjustment to life with Charlotte.

SELF-TESTING QUESTIONS

- Q1.* Outline the role that the midwife would play in the antenatal and postnatal care of Helen.
- Q2.* How might the midwife/or health visitor have prepared Helen and Patrick for the care of their new baby and the stresses that this imposed?

GUIDELINES

Q1. Should include: all the observations made by the midwife during the periods in question; the relationships built up between the midwife and Helen; the links between the midwife and medical team and the health visitor; and advice and teaching that the midwife might give.

Q2. Should concentrate on the interpersonal relationships built up between the midwife and health visitor and the couple concerned, and on mothercraft teaching based upon the needs of the couple.

(b) A large family

Mary and Peter, both aged 23, have been married for seven years. Both are poorly educated and immature. Peter has had several jobs, interspersed with periods of unemployment, but now has a job as a warehouseman. They married during their first pregnancy, soon after leaving school, and have five children. Various methods of contraception have been tried, but without consistency. They live in a small Victorian terraced house in the town where they both grew up, and have had occasional rent arrears. Their social worker has visited them regularly since two of the children were found with suspicious bruising on their bodies. The eldest child has a truancy record and the next three attend a day nursery to relieve some of the pressures of the inadequate parents.

A further pregnancy was diagnosed when Mary belatedly attended the postnatal clinic. Termination of the pregnancy was offered, as Mary is epileptic with particularly severe episodes of fitting in the postnatal period, but this was rejected out of hand by both Mary and Peter. During this pregnancy Mary became increasingly moody and inadequate. Peter started to drink heavily and on several occasions beat Mary. She took her frustrations out on the children, particularly the baby. This abuse was discovered when the baby was taken to Accident and Emergency Department unconscious and with chest injuries after 'falling off a chair'. Obvious abuse of the other children was also noted.

A care order was taken out for all five children who were placed with foster parents. The parents, brothers and sisters of both Mary and Peter were incensed with the action of the social services department. All took the attitude that parents had the right to chastise children, and husbands their wives,



without outside interference. They were supportive of the couple only to the extent of all having a common 'enemy', but had no constructive help to offer.

Mary was admitted to hospital three times during the pregnancy — once for the correction of anaemia and twice with abdominal pain of undiagnosed origin. On the latter two occasions she had severe contusions of her face, back and abdomen, but would give no satisfactory explanation for these. She went into labour at 35 weeks' gestation and delivered a low-birth-weight baby boy — Mark. During her stay in hospital after delivery Peter left home with another woman. Mary's parents reluctantly offered a home for Mary and the baby, when he was eventually discharged from the special-care baby unit. A place in a day centre, run by a volunteer group for mothers who have difficulty in managing their homes and families, was found for Mary, but she only attended intermittently. Regular visits were made by the health visitor and social worker in order to ensure the health of the baby. Mary visited her other five children, accompanied by a social worker, but requested that they remain in care until she was 'sorted out'.

This case study illustrates in an extreme way how a pregnancy *can* put severe stresses upon a deteriorating marital and family relationship. It is, however, based upon a number of true situations.

SELF-TESTING QUESTIONS

- Q1. What is the responsibility of the midwife for family planning advice and teaching? What methods of contraception could be suggested in the case of Mary and Peter?
- Q2. How might the midwife have become aware of the abuse to Mary and her children? Who could she contact when she became aware of this abuse?

GUIDELINES

- Q1. Should include moral and ethical considerations associated with contraceptive advice as well as methods available. Consideration should also be given to the inadequacy of this couple of maintaining consistent motivation towards the size of the family.
- Q2. Should include the role of the community midwife and the links that she has with other caring services, professional and self-help.

(c) A schoolgirl pregnancy

Michelle, aged 15½, is the only child of Ralph, the export manager of a large firm, and Doreen who is a leading light in many local charities and associations. Michelle was a quiet, friendless girl at school but had a high educational standard and hoped to pursue musical interests either at university or at the Royal College of Music.

When she realised that she was pregnant Michelle was, in turn, horrified and then elated. She could see the consequences of her pregnancy on her 'O'-level examinations later in the year and the distress that it would cause to her parents. But she also felt some superiority over the other girls in her class, as



she had 'proved herself' in the adult world. She could remember the pre-Christmas party at which she drank too much and smoked some 'odd' cigarettes, and there was a vague memory of intercourse, but with whom? Michelle decided that she would try to suppress knowledge of the pregnancy — she hoped that if she ignored it, it might go away. The pretence was maintained throughout the summer term and her examinations, as both parents were very busy and put Michelle's preoccupied manner down to the school work. The girls at school ignored her as she became more introverted than usual. Fortunately for Michelle (as she thought) fashions were very loose and flowing that year.

The secret pregnancy was discovered by her mother at the beginning of the summer holiday, the discovery causing great distress to both parents. They realised that there was no hope of finding the father and that decisions about the baby had to be made very quickly, as it was due in about one month's time. After the initial disappointment and distress, Ralph and Doreen made arrangements for Michelle to be examined by a consultant obstetrician, and delivery in a private clinic was organised. In consultation as a family they also made arrangements with an adoption agency for adoption of the baby after birth, as they felt that this would be in the interests of Michelle. A normal baby boy weighing 2.75 kg was born by normal delivery two days after Michelle's poor 'O'-level results were published. She cared for her baby for 10 days after delivery whilst in hospital and handed him over to a social worker from the adoption agency on discharge from hospital, signing the preliminary adoption papers. Michelle was apparently unaffected by the experience, but felt a distancing from her parents and bitterness about parting with her baby. She took refuge in her music practice and studies, but would not return to school for sixth form studies.

SELF-TESTING QUESTIONS

- Q1.* Due to the media and teaching in schools, teenagers nowadays have a better understanding of the 'facts of life' than their parents. Discuss.
- Q2.* What steps are taken for the adoption of a baby and who are the people and agencies involved?

GUIDELINES

Questions 1 and 2 will require some research.

Q1. Consideration should be given to the role of the school nurse, the teaching of sex education in school, local counselling groups for teenagers and the fact that there are increasing numbers of schoolgirl pregnancies.

Q2. This will need research into: the legal adoption procedure; the role of the local authority social services department in this; and the vetting both of prospective adoptive parents and the background of the baby who is to be adopted.

(d) A baby for a mother who is a recent immigrant

Gopal, aged 24, was born in India but educated in Britain from the age of six. He is a graduate and has worked for a pharmaceutical firm in a London suburb. He is married to Rani, aged 16, who was born and brought up in India within her father's family. She moved to Britain with her mother when aged 15½, but was unable to benefit from the few weeks' schooling that she received in Britain. She is likeable and numerate in her own language, but understands little English. Gopal and Rani live with a brother and sister-in-law of Gopal,



who are both students at a local polytechnic. Rani conceived a few months after her marriage, within a year of arriving in Britain. She was so conditioned by her upbringing and her lack of knowledge of English that she was unable to leave the house on her own, and was obviously very lonely during the day. Her sister-in-law accompanied her to the doctor's surgery and hospital for all antenatal visits, acting as interpreter and companion. She also helped with form filling and purchasing the layette for the baby. Rani's place within the small, extended family was as cook and general housekeeper, a role which she maintained throughout an uneventful pregnancy.

A baby boy was born at term by forceps delivery when the second stage of labour was slightly prolonged. Rani was bewildered by the process of labour, having no antenatal preparation for the event from either her family or the professionals. Fortunately, her sister-in-law was prepared and able to sit with her during labour, which was of some assistance to her. However, after delivery, Rani found herself in a completely foreign environment — the hospital — with no means of communication with the midwifery staff except at visiting time. The staff were concerned about the isolation of Rani and encouraged both extra visiting from her family and their participation in baby care to enable them to look after her own baby. However, it was several weeks before she was able both to cope with the baby and to resume her previous role within the family. Rani was determined that, prior to another pregnancy, she would learn English so that she could become more independent.

SELF-TESTING QUESTIONS

- Q1.* Are there any ways in which the family of Rani and the professionals caring for her could have helped her towards an understanding of pregnancy, delivery and baby care?
- Q2.* How can nurses and midwives prepare themselves for caring for women from a different cultural, religious and linguistic background?

GUIDELINES

Q1. Consideration should perhaps be given to: communication with the whole family; contacts with people speaking the appropriate language; and the use of pamphlets, etc in other languages.

Q2. Will depend to a great extent on local facilities for an understanding of the cultural differences and the population mix with which professionals have come into contact. It is very much a personal challenge.

(e) A baby in a family with a handicapped child



Paul and Jill, a couple in their middle thirties, were both surprised and rather daunted when they realised that Jill was now pregnant for the third time. Their eldest child, Michael, was aged ten, and Jane, who had Down's syndrome, was aged eight at the time that the third pregnancy was recognised. Jane was at a special school for the mentally handicapped on a daily basis but required considerable care and attention from her parents when not at school. This had created stress within the family, with the marriage undergoing a very difficult time when the extent of Jane's handicap had been realised.

Jill's first reaction to the third, unexpected pregnancy was to request termination. The GP understood this reaction and interviewed Paul and Jill together. He explained that amniocentesis could be carried out to exclude both Down's syndrome and spina bifida, and discussed the fears of a further handicapped child and the difficulties that could arise within the family if the pregnancy was allowed to continue. An early consultation with the obstetrician/gynaecologist was arranged, but Jill and Paul felt more confident about the pregnancy after discussion with their GP and other parents at the school which Jane attended.

Amniocentesis was performed at 10 weeks' gestation when Jill and Paul visited the hospital consultant. No abnormalities were discovered in the amniotic fluid tested and it was decided that the pregnancy should be allowed to continue. Michael was originally embarrassed when he was told of the pregnancy, but later became very involved with the preparations. Jane was not able to comprehend, although Jill tried hard to interest her in the coming baby.

At 36 weeks' gestation Jill's blood pressure was found to be raised and admission to hospital was advised. The social services department agreed to finance temporary boarding for Jane at the school she normally attended on a daily basis. The arrangement continued until the end of the term by which time Jill had delivered a normal, healthy baby girl — Claire.

Michael, Jill and Paul adjusted well to the new baby, despite Jill feeling very out of practice as far as baby care was concerned. Jane visited her mother and the new baby in hospital and at weekends until the end of term — when Claire was five weeks old. Jane treated her sister as a doll and was unthinkingly rough, so needed to be kept from handling the baby except under close supervision.

SELF-TESTING QUESTIONS

- Q1.* What problems may be faced by the parents and 'normal' children in a family where one child has a handicap?
- Q2.* What are the legal grounds for termination of pregnancy? Justify your own ethical position on this subject.

GUIDELINES

Q1. The answer will be dependent upon such factors as: the type of handicap involved; the position of the handicapped child within the family structure; whether the handicap is inherited or accidental; and whether the handicapped child is cared for within the family or permanently away from home. It may be helpful to discuss this question both with parents in this situation and with someone with a handicapped sibling.

Q2. Part one is a matter of fact which can be researched. Part two is an examination of your own thoughts and feelings. Consider how these could affect patients in your care undergoing termination of pregnancy.

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