HEALTH CARE BUDGETING AND FINANCIAL MANAGEMENT

Revised and Updated

William J. Ward, Jr.

Health Care Budgeting and Financial Management

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Second Edition

William J. Ward, Jr.

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PREFACE

This text was developed as the result of a perceived need for non-financial managers to know enough about financial management in the context of health services to be successful in their day-to-day managerial activities while not burdening them with an approach bordering on overkill. As a result, this text is not an "everything you ever wanted to know about financial management, but were afraid to ask" tome. Instead, it is a plain talk, introductory text that provides enough information to be useful and completely sufficient for non-financial managers while at the same time providing a sound basis for additional study.

Only basic math is required: multiply, divide, add, and subtract. The reader must possess a reasonable level of common sense and a willingness to ask questions and challenge the answers the simple math provides: Does the answer make sense? Is it achievable? Was the right math applied to the wrong data?

The combination of simple mathematics, a positive attitude, a questioning approach, and the tools provided in this text will go a long way to helping managers succeed in achieving their objectives.

Please note that with the exception of historical values and amounts, the volume amounts, dollar values, costs, prices, productivity rates, and so on are solely for demonstration purposes and are not meant to represent real-world values.

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ACKNOWLEDGMENTS

Several people helped with the writing of this book.

Thanks go to my children Lisa, Colin, and Maggie, who were very supportive as I spent countless hours bent over a keyboard.

Margaret Fischer provided a wealth of editorial assistance and advice. Many thanks, Maggie.

In 1982, Joseph Proulx, RN, EdD, a professor at the University of Maryland School of Nursing, left a cryptic phone message asking if I would be interested in pursuing, in his words, an "entrepreneurial opportunity" and requesting a return call. The opportunity was to teach a finance course in the master's program at the school. I agreed and, as the saying goes, the rest is history. Thanks for making that call, Joe, and for sticking with me during those early, shaky days in the classroom.

My wife, Judy, deserves special thanks for putting up with my absence as I hunkered down in my mental bunker to write this third book. There is an old saying that behind every successful man there is a woman (kicking him!). That is certainly true in my case. I could never have done this without her support and encouragement.

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INTRODUCTION

For decades, managers in health care have risen to those positions from the various technical and professional ranks. The best nurse became the nurse manager. The best pharmacist became the pharmacy director. The best social worker was promoted to director of social work. Few, if any, possessed the necessary business skills to perform well in managerial positions. A cartoon in the *New Yorker* several years ago portrayed this well. It depicted two men chatting at a bar over drinks. One turns to the other and says, "Then I made the leap from skilled labor to unskilled management."

This is not to say that the best nurse, pharmacist, and social worker cannot also become strong managers. In fact, one of the most important tasks for any manager is overcoming the pervasive myth that non-financial managers are incapable of managing the financial resource. This myth may have begun in the earliest days of the modern health care era (generally defined as beginning with the implementation of Medicare in the mid-1960s) when department-level managers often concentrated only on their professional work (nursing, labs, environmental services, etc.) and paid scant attention to their operating budgets. In today's environment, these same managers do pay attention to their financial performance, but they are handicapped by the carryover notion that mere mortals cannot do financial management. It is a challenge to confidence. Lacking the confidence that one can perform certain functions, one has difficulty with those functions. Again, this is based on the notion of living up to or down to expectations. The truth is that anyone capable of four simple mathematical

tasks (multiplication, division, addition, subtraction) can be a good financial manager as long as he or she applies a sound level of common sense to the results of his or her mathematical efforts.

Like it or not, health care has become a business. Resources are scarce and stretched to the breaking point. Doing more with less is routine. The need for sound financial management tools—survival skills—is paramount. These tools and survival skills form the heart of this book. Managers need proficiency in planning and budgeting, financial analysis, and resource maximization. These skills are critical if health care organizations are to achieve their missions and operating units are to contribute to "bottom-line" results.

Planning and budgeting skills include (1) being able to calculate a volume budget and a revenue budget based on workload and prices; (2) determining staffing levels that support a given degree of business activity and that take productivity and idle time into account; (3) preparing a salary budget that includes base salary, raises during the year, shift, and other premium payments; and (4) developing a budget for supplies, services, and equipment.

Examining financial performance requires that managers know how to do volume-adjusted variance analysis to help understand the real drivers of a deviation from budget. They need to know how to put together a variety of financial analyses to support business planning, investigate emerging opportunities, and make prudent, sound decisions.

Performance reporting is essential to maximize scarce resources. Managers must be able to read and understand the reports, focus on the important elements, and use the information gleaned from row upon row of numbers to better manage their resources.

Because so many managers do not possess these skills, organizations often fail to achieve the results they had hoped for. This text will provide these new managers, as well as their more experienced colleagues, with the tools they need to manage scarce resources and achieve their objectives.

Chapter 1

WELCOME TO HEALTH CARE AND FINANCIAL MANAGEMENT

The principal role of a manager is to achieve the organization's objectives. That role is not necessarily to achieve the objectives solely of the department but rather the organization as a whole. That is to say, managers should focus on both their department's objectives and the entire organization's objectives. This is because health care organizations are really systems rather than individual departments.

Consider the example of the laboratory manager who wishes to achieve his departmental objective of having the lowest possible cost per test. The easiest way to do this is to eliminate evening, night, and weekend staffing; batch process all specimens using high-capacity instruments; and ban STAT testing and exotic, high-cost tests. These strategies will achieve the lowest possible cost per test. At the same time, however, there will be a significant, adverse effect on the organization's objective of providing quality, timely care because laboratory results will be delayed, causing treatment to be delayed. Let's say that a patient presents in the emergency department on a Sunday evening with a hot belly. The patient will languish there while waiting until Monday morning for the labs to reopen. By then, a simple case of appendicitis may have degenerated into a more serious case: a ruptured appendix and the associated peritonitis. This strategy is certainly not good for patient care but successful from the standpoint of a manager trying to hit a department cost target. Further, because a lack of timely test results slows patient care throughout the hospital, the institutional revenue flow suffers, dropping faster and further than the drop in operating cost.

Managers need to strike a balance between departmental and organizational objectives. Instead of shooting for the lowest possible cost per test, a more reasonable cost target that would have kept the lab fully functioning

might have been established while at the same time not blocking the flow of patients. In this way, cost could have been reduced, although not as dramatically, revenue would not have been negatively impacted, and the bottom-line result would have been significantly better.

Unfortunately, many managers don't see the "big picture" and do not understand how their actions impact the rest of the organization. Many are incentivized via performance review systems to focus solely on departmental objectives. Health care organizations, and particularly hospitals, are extremely compartmentalized, with each department functioning in isolation in its own compartment with little or no sense of what is happening in the other compartments. This is one of the contributors to organizational dysfunctionality and is a principal reason that patient flow is not as smooth as it could be. Inefficiencies abound in these compartmentalized organizations.

DEFINING FINANCIAL MANAGEMENT

Financial management is the art of maximizing wealth or value: wealth for the stockholders in a for-profit organization and value for the stakeholders in a nonprofit setting. It involves getting the most out of the resources. In either setting, profit is essential. In fact, to reinforce the proper mind-set, it is far better to avoid the use of the terms "for-profit" and "nonprofit," instead using "taxable" for the for-profit organizations and "tax exempt" for the nonprofits. People often live up to or down to expectations. And so, if the expectation is that the organization is nonprofit, then not making a profit is perfectly acceptable. Changing the vocabulary changes the expectation.

What parents would ever suggest to their school-age child that they aim for a "B" grade? Missing a bit low can result in a "C" which is not a very good grade. Instead, parents encourage their children to strive to achieve "A's." A miss there will still result in a B—a good grade.

As the late Sister Irene Kraus, former head of the Daughters of Charity National Health System, so eloquently put it, "No margin, no mission!" Without profits (margin), there is no monetary fuel to drive the mission of the organization. Where does the money come from to acquire new technologies, to fund new program initiatives, to renew and expand hospitals and clinics, and to do all the other things that patients have come to expect? The answer is from the bottom line—the profits of the organization.

But the focus needs to be balanced, not focused solely on the bottom line. To borrow from Sister Irene, the focus must simultaneously consider

both margin and mission. Proper consideration must be given to the clinical and service implications when making business and financial decisions. And the business and financial reality must be taken into account when clinical and service decisions are being made.

Consider a hospital that is in need of reducing operating costs. The materials management department is preparing to let a contract for a year's worth of replacement fluorescent bulbs for all of its light fixtures. Historically, the hospital spends $3 million on bulbs each year. The hospital management has received three bids: Supplier A at $2.5 million, Supplier B at $2.75 million, and Supplier C at 2.6 million. All three are 75 watt with an expected life of two years in normal hospital use. Ordinarily, one would expect to go with Supplier A as the low bidder—a strictly business decision. But what if that brand of bulb gave off light that caused the patients' skin to take on an off-color glow? Would this be a good business decision, but a poor clinical one? And how could the decision be balanced? If the goal were to reduce cost while providing good clinical care, going with Supplier C ($2.6 million) would allow the hospital to achieve a substantial cost reduction while simultaneously safeguarding good clinical care: a balanced decision.

The best way to visualize this notion of balance is the functioning of a grandfather clock. Just as the pendulum of the clock seen in Figure 1.1 must swing back and forth in order for the clock to keep good time, so too must the decision process swing back and forth between the clinical/service imperative and the business/financial reality. Neither side can trump the other. Both sides need to be given proper consideration so that a prudent, balanced decision is made.

STRATEGIES FOR SUCCESS

The best way to improve financial performance, reported in an organization's operating statement, is by employing a series of business strategies to improve the bottom line and in so doing improve and expand its mission. These strategies (Figure 1.2) begin with the notion that the bottom-line profit is devoted to supporting the organizational mission. One could argue that in a for-profit (taxable) entity the mission exists in order to make profits, the return on investment for the stockholders, while in a nonprofit (tax exempt) entity the profit exists to drive mission. Regardless, there has to be a healthy bottom line, or the organization will cease to exist. Losing money year after year after year is a prescription for bankruptcy.

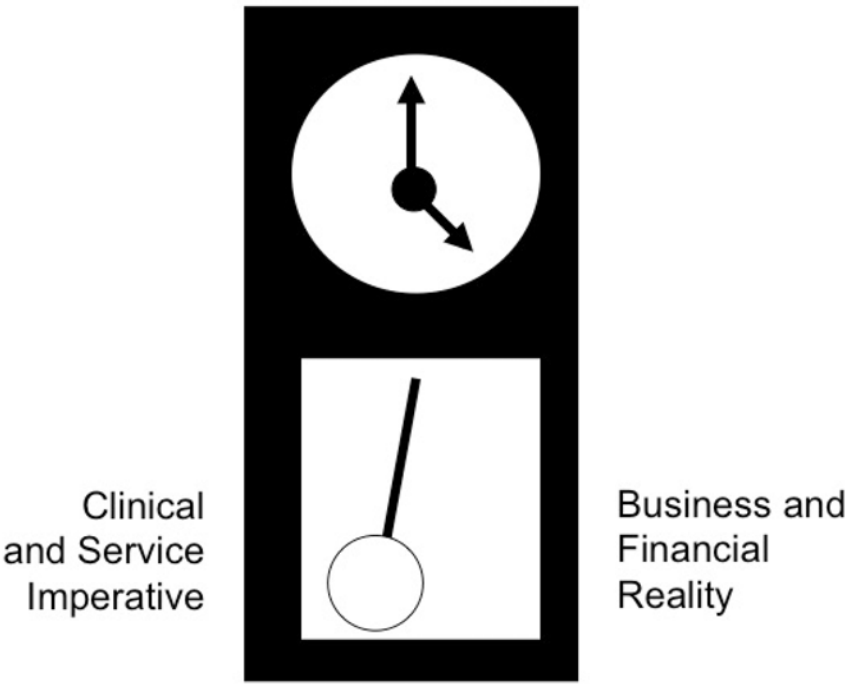

Figure 1.1
The grandfather clock will keep good time as long as the pendulum swings back and forth between the clinical/service imperative and the business/financial reality. If the pendulum sticks to either side, the clock will stop. Good decisions require that the pendulum keep swinging.

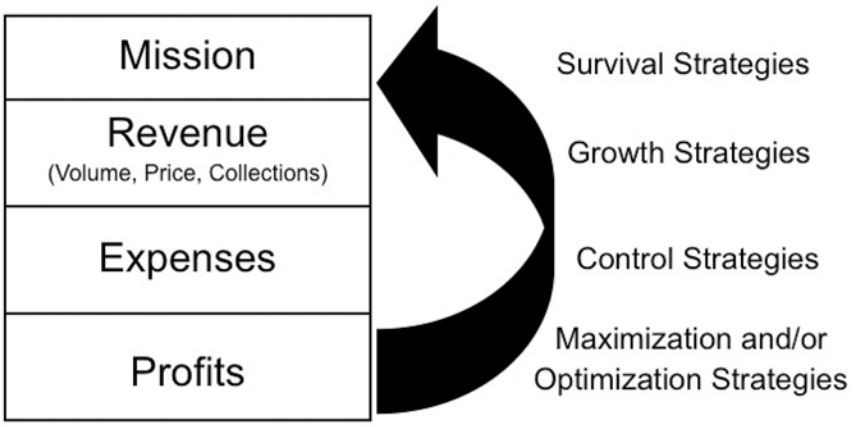

Figure 1.2
All four strategies combine to drive the mission—the ultimate goal of the organization. Each strategy reinforces and supports the others.

The first strategy to achieving business success is a survival strategy for the mission—to keep the business in business. This means the business must flourish and, more important, grow. This is no different than a newborn baby who must also flourish and grow. Failing to do so portends a bleak future; a diagnosis of failure to thrive is not good news to new parents. The same is true for health care organizations. The profits fuel everything from day-to-day operations to the acquisition of new technologies, all of it designed to support and grow the mission.

The survival strategy leads to the second strategy: a maximization or optimization strategy for the profit line, that is, making the most profit in order to get the most mission. This can be a maximization strategy—the largest possible profit—or an optimization strategy—the largest amount possible while at the same time avoiding an adverse reaction from the "three Ps": the press, politicians, and the public. The exact amount that triggers such a reaction is unknown. It depends on location, circumstances, and a number of other factors. What is clear is that the three Ps have no idea how profits work or why they are so vitally important. All they see is the juxtaposition of a profit amount and the nonprofit notation. Given the current environment surrounding profits, it is best to maintain a low profile and optimize versus maximize the bottom line.

The third strategy is revenue growth, and it involves three elements: business volume, pricing, and collections. Improvements in any of these elements or a combination of all three will generate increased revenue—the fuel for the business. Revenue growth is what all successful businesses pursue. It is so much easier than trying to cut expenses. And as Tom Peters advises, "You can't shrink your way to greatness."[1] This advice applies to the fourth and final strategy as well: cost control.

Not to be confused with cost reduction, cost control strategies seek to limit the growth of spending. As will be discussed in Chapter 3 "Cost and Cost Behavior," operating costs are largely fixed. Because of this, strategies to control cost growth are not that difficult to implement given that the costs themselves have to remain fairly constant. If, for example, volume grows by 10%, the amount of cost growth can be limited to a mere fraction of that.

While it is certainly important to track and manage performance in the current time frame (this month, this quarter, this year), it is also important to maintain a long-term perspective. What strategies need to be in place in the current time frame in order to assure financial success two, three, or four years into the future? Are there sacrifices, which must be made this year, to assure a steady stream of business and profits in the out years? While losing money consistently is a major problem, losing money

this year because of actions designed to safeguard future years may be an acceptable business strategy.

A key component of thinking strategically is the ability to anticipate what is likely to happen and take appropriate action. Retired hockey star Wayne Gretzky provides a marvelous insight into the notion of strategic thinking. He advises anticipation, "A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be."[2] It is far easier to achieve positive results if one can anticipate how volume will change, what new regulations will influence reimbursement, or how events in the marketplace will affect future labor costs. Too often, however, managers lose sight of the future and concentrate all of their efforts on today's issues. While this is important, it handicaps their ability to deal with the challenges of the future. Keep in mind that health care organizations, particularly hospitals, long-term acute care (LTAC) facilities, and nursing homes do not maneuver quickly. Because of this, more of a long-term view must be taken.

For many years, financial strategies used by large health care organizations have concentrated on cost reduction, a strategy that seeks to continue providing care while reducing the amount of resources used to provide that care. And although getting the most from every available resource dollar is essential, the result, by and large, has been deterioration in the quality of health care provided. No longer can a one-size-fits-all cost reduction approach be taken to improving the bottom like. Two absolutes must be kept in mind. The first is that reducing cost never improves quality. The best it's going to do is leave quality unchanged. The second absolute is that improving quality always improves cost performance. In a worst-case scenario, it will improve cost efficiency. Failure to comprehend these two absolutes compromises both business and clinical outcomes. The insistence on cost reduction leads to dysfunctionality, which makes revenue-generating throughput more and more difficult. This reduces bottom-line results and leads to another round of cost reduction. The organization falls into a downward spiral from which it may not recover. Clinically, a concentration on cost reduction leads to more mistakes and errors, and worse clinical outcomes.

It is also important that managers concentrate on proper communication. This involves not only understanding the language of finance and using it properly but also making sure that questions and answers in a finance discussion match up with each other. For instance, the answer to the question "How much budget do I have?" is not "You have plenty of money." If the manager does not understand the question, how can he or

she give a good answer? How can the manager avoid misleading people and making a poor business decision? If one does not understand the question, ask for it to be clarified. Remember, the one responsible for assuring a good dialog is the one starting the dialog. Questions need to be phrased simply and in understandable language.

PARADIGMS TO GUIDE PERFORMANCE

Success in managing money is governed by two important paradigms. The financial management paradigm (Figure 1.3) encompasses three areas that managers must focus on: performance planning, performance measurement, and performance management.

Performance planning deals with developing statements of intent, budgets and plans, and ideas of what is to be accomplished. So the questions to be asked in this element of the paradigm are, what do we want to accomplish? what are our objectives?, and what is it that we wish to have achieved when all is said and done? This is the "where do we want to be?" element.

The second element, performance measurement, answers the question, "where are we?" in the journey to achieve the objectives. Are we ahead of

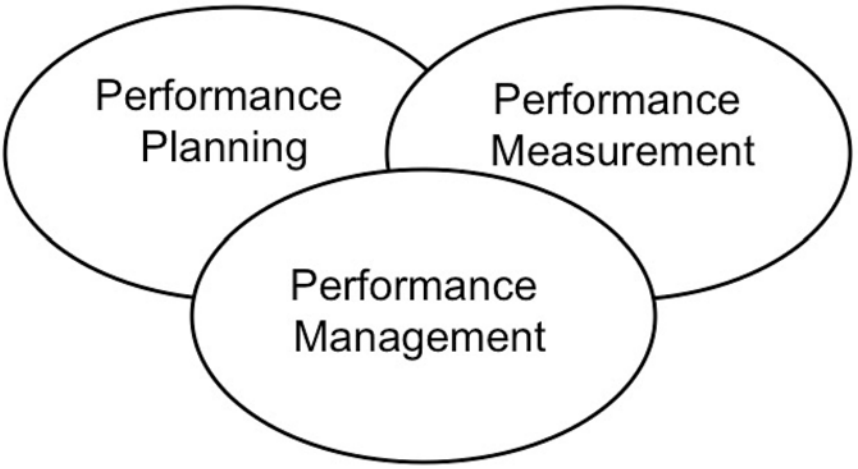

Figure 1.3
Managers must focus on all three elements of the financial management paradigm: planning what they want to accomplish, measuring progress toward that goal, and managing resources to get there.

the plan or behind? Is business growing faster than expected or slower? Is corrective action needed to achieve the objectives? This sort of information helps managers understand how their performance is and what, if any, action they need to take to improve their performance.

Depending on what is reported and how well or poorly actual results compare with the original performance plan, the third paradigm element, performance management, comes into play. What analyses must the manager perform to determine the cause of a performance deviation? What will be the financial effect of proposed remedial action? How should performance be modified to get back on track to achievement of the budgeted performance? In essence, what does the manager need to do to get the first two disks of the paradigm, performance planning and performance measurement, to overlap; what does the manager need to do to get "where are we?" to be the same as "where do we want to be?"

In managing financial resources, follow a monthly cycle of activities as depicted in Figure 1.4. These activities begin with a thorough examination of actual performance of business volume, revenues, and operating expenses. Following these, a prudent manager will prepare forecasts—looking at

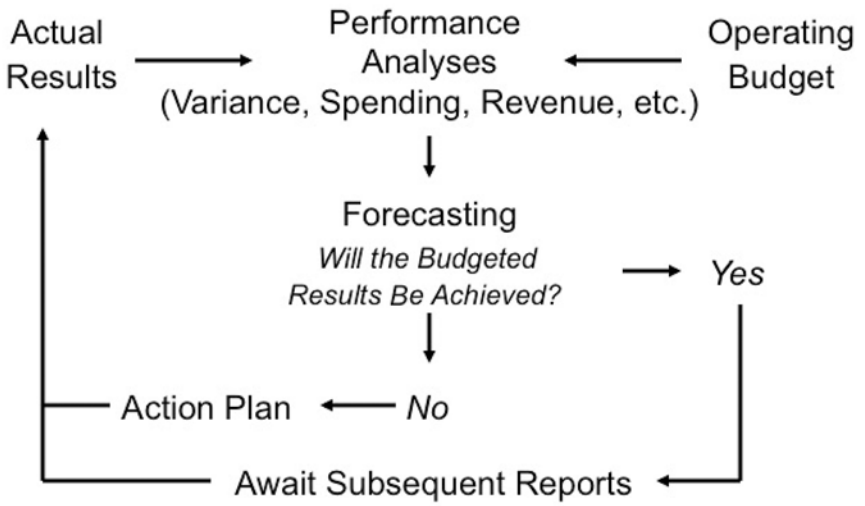

Figure 1.4
The cycle of management: examining performance and comparing it with the budget, developing a forecast of the future, and putting together an action plan to remedy problematic performance are among the monthly tasks for managers.

future business volume, future revenue, and future operating expenses—to determine if managerial action is needed to achieve compliance with the operating budget. In those rare instances when no action is needed, the manager can move on to other activities and await the subsequent month's performance reports. But in most cases, action will be needed to correct performance deviations. This will require an action plan without which nothing ever happens.

The second essential paradigm deals with management in general: the management success paradigm. Its three elements (Figure 1.5) are responsibility, authority, and accountability.

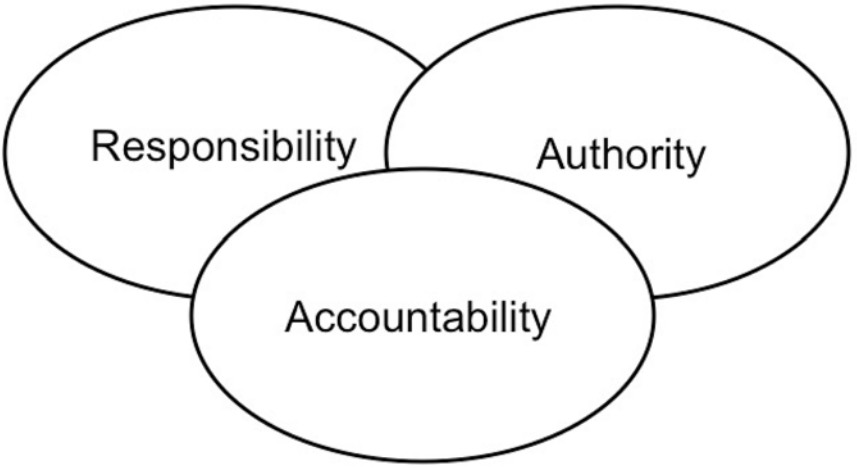

Figure 1.5
The management success paradigm: assigning specific responsibility, delegating appropriate levels of authority, and holding individuals accountable for achievement of objectives are essential to success.

In order to succeed, someone needs to be made responsible for the achievement of something. Examples include a financial objective, the implementation of a new program, or the installation of some new technology. It is important that whatever is to be achieved should be clearly defined and compliant with the concept of SMART objectives—*S*pecific, *M*easurable, *A*chievable, *R*elevant, and *T*imely or *T*ime bound. (For a more detailed description of the SMART objectives, visit the IOM website at www.iom.edu and enter the keyword SMART.) The following scenario illustrates the use of SMART objectives.

A physician practice currently has a patient satisfaction score of 3.5 on a five-point scale. The leadership of the practice wants to improve patient satisfaction. The practice manager is charged with achieving an improvement in patient satisfaction scores. After six months' effort, the latest survey shows that the satisfaction score stands at 3.7. Mission accomplished! But the physicians are not happy. They had expected more. They would have been better served to have stated the target as "improved patient satisfaction scores to 4.7 or higher within the next six months." Now the manager knows exactly what is expected: the target is specific, measurable, achievable, relevant (to the success of the physician practice), and timely (needing to be accomplished within six months).

In assigning responsibility, focus on individuals and not teams or groups. There can be too much confusion if responsibility is assigned to more than one person. Phrases like "I thought Sally would handle that" or "I was waiting for Bob before I took action" are common problems when responsibility is assigned to more than one person.

The second element of this management success paradigm is authority. The person responsible needs to be given the necessary authority to achieve the objective: not too much and not too little. Whether this involves schedule changes, resource reallocation, or work process changes, the person responsible should be able to make the changes without needing to request approval from a higher authority. If the person is constantly asking for permission, then he or she is not really in charge. The assignment of too much authority must also be avoided. The manager responsible for reducing waiting times in the clinic cannot have the authority to change corporate policy governing fringe benefits or vacation time accrual.

The final element is accountability: the individual needs to be held accountable for what was, or was not, achieved. This means some form of positive reward for achievement and a penalty for not achieving. Often, the notion of accountability carries with it a negative connotation. Fail to achieve and bad things happen. But better results are achieved with positive accountability (good things happening to the individuals involved); it sends a clear message to everyone that success is rewarded. It is based on the old adage, "you can catch more flies with honey than with vinegar."

TODAY'S HEALTH CARE DILEMMA

Health care, specifically the high cost of health care and the resulting need for reform, has been one of the hottest topics of discussion in several presidential election campaigns during the 20th century and in the early

21st-century. Why health care reform? The answer lies in the fact that millions of Americans have no insurance coverage and must pay out of pocket for the care they receive. Others who do have coverage face high deductibles. At the same time, premium costs are growing at alarming rates. There is no health care system-wide cost containment program. Politicians are quick to grasp the fact that so many uninsured or underinsured Americans represent a sizable block of votes. Health care has progressed rapidly from an annoyance to a national campaign issue. But this is not a new issue. It first surfaced when Roosevelt was running for office. But not Franklin Roosevelt, Teddy Roosevelt and his Bull Moose Party had national health insurance as part of their campaign platform in the early days of the 20th century. Now, over a century later, it remains a hot political issue.

Economic recessions contribute to the situation and will likely continue to do so in the future. Between the Great Depression (1929–1933) and the Great Recession (2007–2009), there have been 12 such economic downturns lasting from a few months to over a year. In each, a large and vocal segment of the population has lost their employer-provided health insurance coverage when they lost their jobs. In turn, the states felt the effects in the form of lowered tax revenues and the swelling of medical assistance rolls. The decreased state tax revenues, coupled with "balanced budget" spending caps in many states, resulted in significant Medicaid program cuts. Such issues as cost, affordability, and access will remain until a workable and lasting solution is developed. One thing is clear: health care reform has been and will remain a hot political topic for many years to come. The only question is the pace and scope of the reform efforts.

But what exactly is the health care delivery system that many say is in such dire need of a massive overhaul? Some facts and figures can help to define it. In a 2014 snapshot, the U.S. health care system comprised approximately 5,700 hospitals, approximately two-thirds of which were in multihospital systems. Hospitals operated over 920,000 beds, with an occupancy rate below 70%. They employed nearly 40% of the total health care workforce.[3,4] Nearly 15,500 nursing homes operated 1.6 million beds.[5] Just under 900,000 physicians were active as of September 2014, split fairly evenly between primary care physicians and specialists.

In 2013, Americans spent approximately $2.9 trillion (Table 1.1), with the majority spent on hospitals and physician services.

The cost of these services (Table 1.2) was spread among several payers, with employers picking up nearly half of the tab through health insurance premiums.

Table 1.1
Health Care Spending by Segment, 2013[6]

Health Care Segment	Dollars in Billions
Hospitals	$936.9
Physicians and clinics	586.7
Prescription drugs	271.1
Nursing care and continuing care retirement facilities	155.8
Other health, residential, and personal care services	148.2
Dental care	111.0
Other professional services	80.2
Home health care	79.8
Other nondurable medical products	55.9
Durable medical equipment	43.0
All others—nonspecific	431.4
Total	$2,900.0

Source: Adapted from data found in "National Health Expenditures 2013 Highlights," Centers for Medicare and Medicaid Services.

Table 1.2
Paying for Health Care

Payment Source	Approximate Proportion (%)
Private (employer)	37
Medicare	22
Medicaid	18
Other public	10
Out of pocket and uninsured	13
Total	100

Note: As of 2013, private and employer-provided insurance covered over a third of the cost, with government programs paying about 40%. A large segment of the population remained uninsured.

Source: National Health Expenditure Data, Centers for Medicare and Medicaid Services (http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html?redirect=/NationalHealthExpendData/).

Regrettably, Americans do not live significantly longer despite spending more per capita than any other nation. Table 1.3 shows the comparative per capita spending on health and life expectancy of selected countries. Japanese spend a bit over a third of their American counterparts but live five years longer.

Table 1.3
Spending More but Living Less[7]

Country	Per Capita Spending ($)	Life Expectancy
United States	8,895	79
Canada	4,676	82
Germany	4,617	81
Japan	3,378	84
United Kingdom	3,495	81

Source: "Life Expectancy, Both Sexes, 2012; Per Capita Total Expenditures on Health," World Health Organization, 2012.

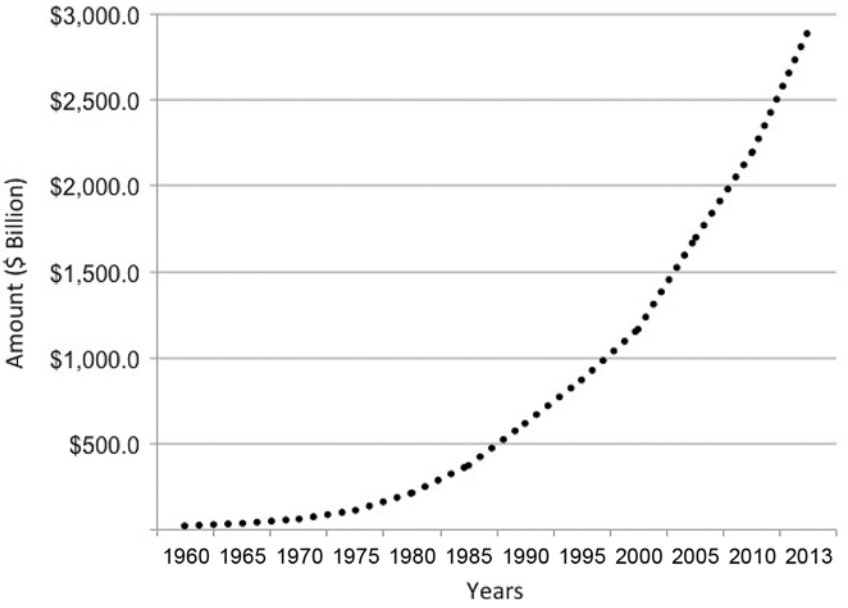

Figure 1.6
Total health care spending has grown at a compound annual growth rate of 9.66% since the advent of Medicare and Medicaid in the mid-1960s. (California HealthCare Foundation)

The excessive spending in the U.S. system is nothing new. As Figure 1.6 illustrates, spending has been growing almost asymptotically since the advent of Medicare and Medicaid in the 1960s. It now accounts for 17.9% of gross domestic product.[8]

Whether focusing on the total national health care expenditures, patient out-of-pocket amounts, health insurance premiums, or per capita spending, health care has become "too expensive." With an average annual spending of close to $9,000 per person, the question becomes, how can an individual afford health care? Consider the impact on a patient suffering from the wet form of age-related macular degeneration. Given an average charge of about $2,500 a month or $30,000 a year, an uninsured or underinsured patient could face two unpleasant choices: blindness or bankruptcy. In short, without insurance, health care services have largely become unaffordable except for the wealthy and well insured.

As a result, increasing pressure has been applied to providers to avoid expensive, and possibly unnecessary, tests and procedures. The challenge, given the reality that no two patients are alike, is to determine which tests and procedures are truly unnecessary. The move to population health is the latest effort in this regard. Keeping patients healthy and, thus, able to avoid expensive health care (or is it health *repair*?) encounters is far more cost-effective.

To understand fully how the health care delivery system in the United States got into this mess, it is necessary to understand two critical elements—the public's expectations of the system and the way health care is financed.

THE PUBLIC'S EXPECTATIONS

The following open letter to the American public may help explain how the public and the health care delivery system work together to create the dilemma now facing the country.

[Dear American Public:]

I can't stand it any longer—it's me—I am guilty—I did it. I listened to your demands for more of everything, and I supplied them. You wanted more and better educated people to take care of you, and I supplied them. You wanted new and higher levels of care, and I brought them to you. The pressure to create bright, beautiful facilities became a goal for you, and I have responded. You wanted more time in life and I gave it to you. You want me to be close by—and you want me to be ready for anything at anytime—and I am. You want me to pull you into this life and you want me to gently caress your hand as you leave it, and I do. And yes, it costs. It cost a lot more than you like and much more than I would like—and I will continue to create the best possible system for you to use. And I will always

be aware of the resources I consume and the financial burden I contribute to—but I will be here—it's me—I did it—I'm guilty.

Sincerely,

Your American Healthcare System[9]

The letter was written in 1987, but the sentiments are as current as this morning's newspaper headlines. The health care delivery system continues to give the public everything it asks for, but now the public doesn't like the price. The public wanted excess capacity, standby capacity, and no long waits for service, but now the public does not like the price. The public wants to abuse its bodies and have transplants and other high-technology treatments available—without rationing—but now the public does not like the price. Health care providers are doing things today that were unimaginable just a decade ago, but now the public does not like the price. Health care providers find themselves in a difficult position: the public wants more, but wants to pay less for it, and smart politicians are encouraging this.

HOW HEALTH CARE IS FINANCED

To achieve an understanding of how health care is financed, it is necessary to begin with a lesson on basic economic theory—supply and demand. The normal economic system exists in a monetary environment. The parties involved include suppliers (those who supply the goods and services) and consumers (also referred to as orders or payers who "demand" goods and services). As Figure 1.7 illustrates, this is essentially a two-sided exchange between the supplier and consumer accomplished via the exchange of money (or the promise of money) for supplies and services. The economy has operated in this manner for centuries. In the early days, wampum belts and animal skins were quite successful as a unit of exchange.

In the world of supply and demand, price acts as a great equalizer. It establishes an equilibrium (Figure 1.8) so that supply and demand equal each other. Given an economy free of outside pressures (price controls and so on), a lack of equilibrium will cause prices to rise or fall so that equilibrium can once again be established. This concept became painfully obvious with the gasoline crisis of the 1970s. At 30¢–40¢ per gallon, demand exceeded supply. With prices controlled by the government and unable to rise, equilibrium was not easily achieved and long lines and rationing resulted. Since price controls were lifted, prices have been able to float freely up and down to maintain the balance of supply and demand. The

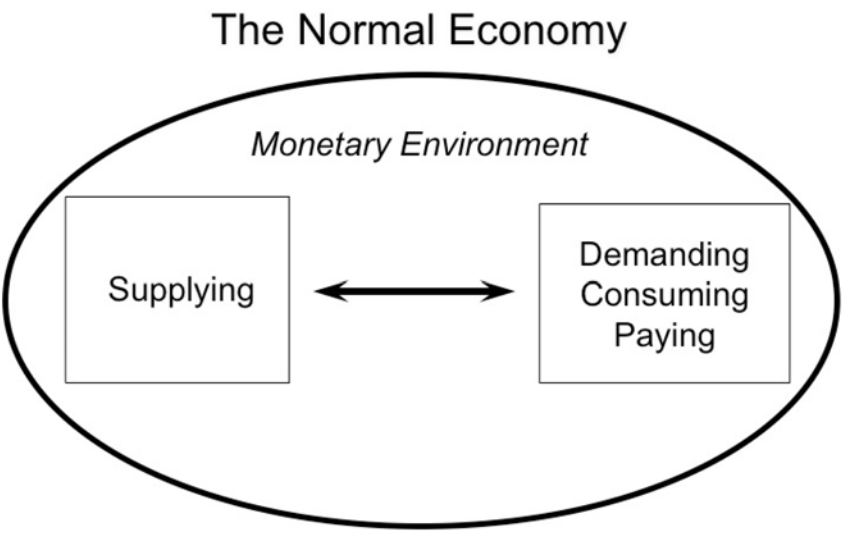

Figure 1.7
In the normal economic environment, all parties function within the monetary environment.

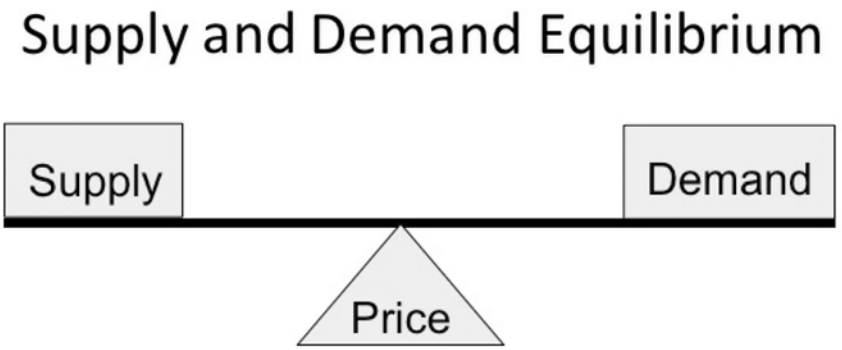

Figure 1.8
Price increases and decreases act to balance supply and demand. When demand is higher than supply, price will rise to mitigate demand and spur supply. When there is an excess of supply, price will decrease to boost demand.

long lines at gas stations during the 1970s were caused by the disequilibrium between supply and demand.

The ability of price to act as the great equalizer is rooted in an economic principle called price elasticity or, as it is sometimes called, price

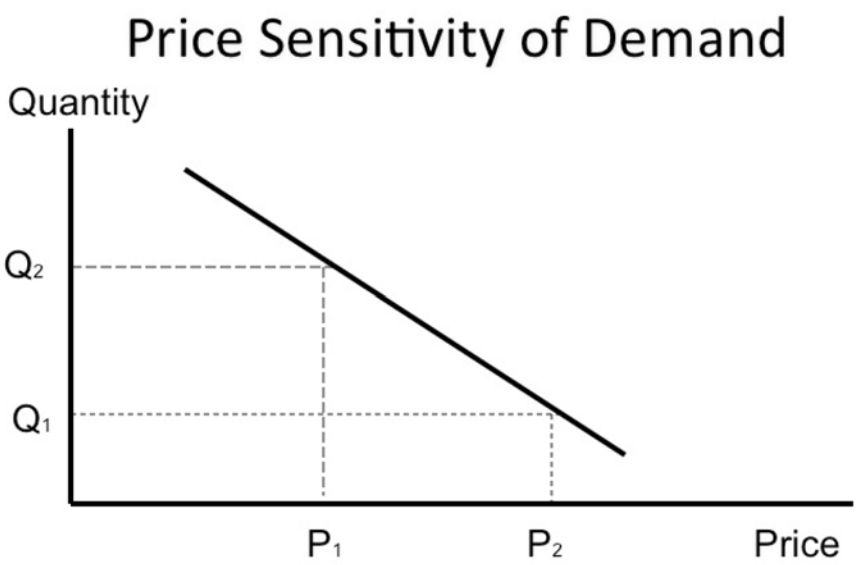

Figure 1.9
As price increases, demand falls. At price P_1, Q_2 of quantity will be demanded. As price increases to P_2, demand drops to Q_1. Conversely, as price drops, demand rises.

sensitivity. Simply stated, this principle holds that the amount of change in demand for (desirable) goods and services is a function of the amount of change in the price of those goods and services. As can be seen in Figure 1.9, as price decreases, demand for goods and services increases and vice versa. It follows therefore that as price decreases to zero, demand for goods and services will increase to the point of becoming insatiable. This is important to remember as it relates to health care because during the late 1960s and into the 1970s, the price of the average American who was "demanding" health care became, by virtue of insurance coverage, essentially zero. The result was an insatiable demand for health care. As supply increased to meet this insatiable demand, the cost to the nation for health care rose at an alarming rate.

This can be understood more clearly by examining the differences evident in the health care economic environment as compared with the normal economic environment. As depicted in Figure 1.10, the monetary environment has remained but has shrunk and no longer includes all of the parties. The relationship between the parties has undergone a significant

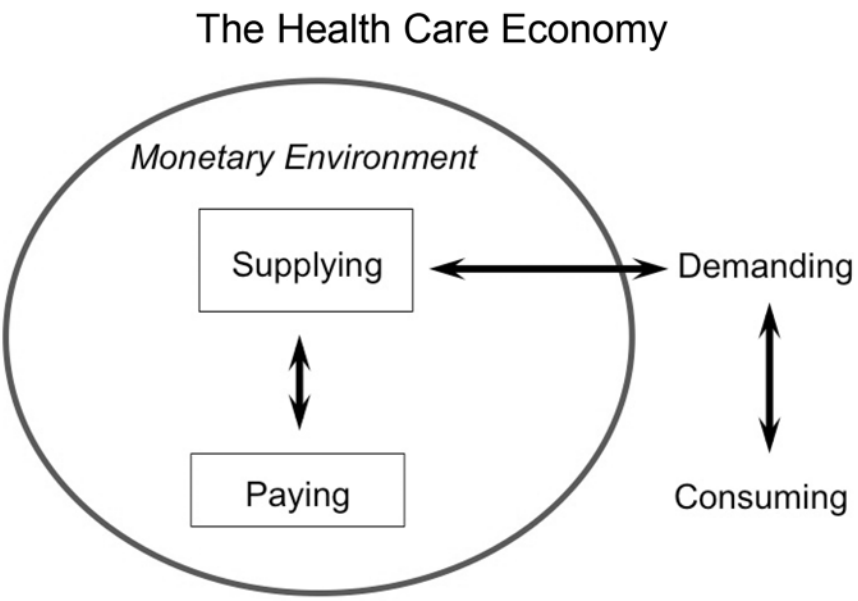

Figure 1.10
In the health care economic environment, only the supplying and paying parties function in the monetary environment.

change. Supply continues to be provided by a single party. Demand, however, which previously included three parties (orderer, consumer, and payer) within the monetary environment, is now divided into three separate parties—the orderer and the consumer, who function outside the monetary environment—and the payer who continues to function inside the monetary environment. The problem in the health care economic system began with this significant change. The cause of the problem stems from the fact that only the supplier and payer function inside the monetary environment. However, the orderer and the consumer function outside of the monetary environment; therefore, price is not able to influence demand. Since neither the orderer nor the consumer (physician and patient) is concerned with price, demand becomes insatiable. Efforts to alter this situation via increased shifting of insurance premium costs to employees and higher deductibles and co-pays have met with little success. This is because after decades of repetitive action the behavior of demand is now habitual. Americans, plain and simple, want lots of care and they do not like paying much for it.

The lack of price sensitivity on the part of the public finds its genesis in the growth of health insurance coverage following World War II. During the

war, approximately 10% of the population was insured. That amount grew until, with the advent of Medicare and Medicaid, about 85% of the population was insured. As more and more people became insured, the price (the amount paid out of pocket) plummeted, and demand increased. Adding fuel to the fire, insurance coverage often encouraged the use of high-cost services to the exclusion of less expensive ones. Certain treatments, for example, were covered only if performed in inpatient setting, even though the same services could be safely provided in less expensive outpatient settings. In essence, health care suffers from demand push inflation—the cost of health care is being driven up by demand. People want more and that costs more. Any reversal of this half century of growth in coverage leads directly to a public outcry over the high cost of health care.

Coupled with this was the introduction of Medicare and Medicaid in the mid-1960s. These two programs instituted a reimbursement methodology called cost reimbursement. The underlying principle was that since the government covered so many patients, the programs should get a good "deal" from hospitals by buying services at cost. In theory, at least, that was fine, but in practice it introduced the notion to providers that "the more you spent, the more you got." In effect, cost reimbursement taught hospitals to spend money—to supply health services to the expanding demand at almost any cost. The flaw in the cost reimbursement logic can be illustrated by the following example.

A wealthy gentleman approaches an automobile dealer and explains that he is in the market for automobiles for all of his five grandchildren. "I want to buy an automobile for each; however, since I am buying so many cars, I don't want to pay the sticker price; I will only pay your cost." With that, the gentleman explains where to deliver each automobile and where to send the bill. Is the dealer likely to send the grandchildren the least expensive or most expensive automobiles?

Substituting Medicare and Medicaid for the wealthy gentleman, hospital for automobile dealer, program beneficiary for grandchildren, and hospital service for automobile produces the following version of the story.

Medicare and Medicaid approach a hospital and explain that they are in the market for hospital services for all of their beneficiaries. "We want to buy hospital services for each; however, since we are buying so much, we don't want to pay the sticker price; we will only pay your cost." With that, Medicare and Medicaid explain where to deliver the hospital services and where to send the bill. Is the hospital likely to provide the beneficiaries the least expensive or most expensive hospital services?

In the decades following the birth of Medicare and Medicaid, government spending has risen sharply. And because one of the rules of cost reimbursement (the programs paid the "lower of cost or charges") required that the prices charged to non-Medicare and Medicaid patients be higher than the cost to Medicare and Medicaid, the prices charged to patients and their insurers climbed as well—hospitals proactively raised their prices to make sure they were well above the cost to Medicare and Medicaid.

IS THERE A SOLUTION?

Will the United States be able to get out of this financial mess? Hopefully, the answer is "yes," but only if care is taken to avoid "trendy" approaches, if a number of popular myths can be debunked, if the multiple agendas of the various players in the melodrama can be avoided, and if all the parties begin to focus on the real problem and not just the symptoms.

A number of trendy ideas are making the rounds these days. A number of academics and policy experts point to the Canadian system, for example, and see it as a way to deal with America's problem. Canadians spend less and live longer. The problem with this idea is that the Canadian approach to life in general is completely different from that in America. Canadians believe in peace, order, and good government. Americans believe in life, liberty, and the pursuit of happiness. There is a high price to be paid for the (reckless) pursuit of happiness. The fundamental difference in the two populations (Canadians are orderly. Americans are not—stuck in the "Wild West" mentality of a bygone era) can be illustrated by visiting the subway systems of New York City and Toronto. In New York City, a subway train pulls to a stop, the doors open, and the crowd on the platform pushes into the cars even as the passengers in the cars are trying to exit. It is chaotic almost to the point of anarchy. In Toronto, quite the opposite is the case. There, a subway train arrives at the station, the doors open, and those on the platform clear a path so that the passengers on the train can exit. Then, once those exiting are finished, they file into the train in an orderly manner. The kind of health system that provides care for an orderly population can never be expected to succeed in dealing with an American population, which wants instant gratification and refuses to wait in line.

Another myth is that providing even more insurance will solve the problem. But the growth of insurance is at the heart of the escalation in demand and cost and is not likely to ameliorate the problem. Still another myth holds that a single-payer, national health insurance program will

work—the Bull Moose Party's approach. Hopefully, it will fare no better. The government has clearly demonstrated its inability to deal effectively with health care since the 1960s and will likely repeat its failings again and again. One need only look at Amtrak, the Postal Service, the Internal Revenue Service, and the Transportation Security Administration to get an idea of what could be in store with a noncompetitive, federally operated system of national health insurance operated by a single payer. And, in a worse-case scenario, were the government to federalize the entire system, it would mean VA style health care for all.

A global budget approach has been suggested as a way to hold down cost. In this approach, each hospital is given a total annual revenue amount and is expected to live within that monetary amount when providing care to its patients. This, however, forces providers into the uncomfortable position of managing the lives of patients (one of the principles of accountable care and population health) so they do not need health care services. Carried to the extreme, one could envision the "health police" carefully monitoring what people eat, how much they exercise, their life styles, and other factors that influence demand. Such an approach does nothing to effectively deal with the demand for service. Rather, it constrains supply. Will the American public, which prefers instant gratification and no lines, tolerate this approach over time?

Another popular myth is that insurance companies should insure everyone, even those with expensive, preexisting conditions. Usually the most poignant cases are used to illustrate the "unfairness" of the situation. If the social objective is to insure all, regardless of risk, then everyone should understand that doing so is expensive and amounts to cost shifting. The very idea behind insurance is to provide a hedge against uncertainty. Insuring those with expensive-to-treat preexisting conditions means taking on an obligation that is certain to occur. There is no risk; there is certainty. At best this represents cost shifting. At worst it is a prescription for bankrupting the insurance industry when the premiums increase higher and faster than is now the case and the buyers of those insurance services stop buying. Cost shifting is fine as long as those to whom the cost is being shifted agreed to accept that cost. Further, if the pool of insured is unbalanced (more sick people than healthy ones), cost shifting can be quite burdensome. As the population ages, to whom will the cost be shifted? Will rationing be used to rebalance the cost shifting equation?

The final myth in need of debunking is that profits in health care are wrong and that nonprofit providers should make no profits, and, if they do, it is proof that they are abusing the public. And for-profit providers

had better not make too much profit (however too much profit might be defined). The public needs to be educated about profits and the need for them if health care providers, be they for-profit or nonprofit, are to survive. Profits provide the funds necessary to replace aging physical plants, acquire modern equipment, develop new and improved programs, and so on. Lacking profits to fund these, where will the money come from? Depreciation on yesterday's equipment will in no way pay for tomorrow's.

Political agendas must be set aside. Telling the public that it has a right to unlimited access to high-quality, low-cost health care is irresponsible at best. While those are noble goals, it is the notion of unlimited access that is at the heart of the cost problem. As a result, unlimited access and low cost simply do not go hand in glove. Unlimited access is achievable, but health care will cost significantly more. Suggesting that providers alone should be responsible for the health of individual patients (the notion promoted by the Affordable Care Act) is wrong. Providers can only be responsible and be held accountable for their actions in providing care. Obviously, they can suggest appropriate behaviors for their patients (better diet, more exercise, healthier life styles, etc.), but acquiescence and compliance with those suggestions is the responsibility of patients.

CRITICAL PLAYERS IN THE HEALTH CARE DILEMMA

In order to achieve a solution, all of the parties must take an active role, or there will be no lasting solution, only another quick fix that may cure one or more of the symptoms at the expense of the other parties. All of the parties will have to give up something if there is to be a lasting solution. Everyone will have to compromise. Just who are all these parties, and what stake does each have?

Most of the money spent on health care goes to the providers of care: hospitals, physicians, and so on. They will be interested in a reimbursement stream that satisfies their need to cover the realistic cost of doing business, including a stream of profit necessary to ensure survival and growth. Indirect providers like drug companies and manufactures of durable medical equipment will need enough of a profit stream to cover research and development and provide sufficient return on investment to keep stockholders happy. In exchange for this, they may find themselves more regulated.

The people paying the bills must be involved. Insurers, employers, and government programs want to reduce the amounts they pay out for health care. For insurers, the driver is premium-based competition. For

employers, the picture is more complex. A reduction in fringe benefit costs translates into an increased ability to offer competitive benefits programs to attract and retain good employees. An overall decrease in premium cost translates into improved business competitiveness. The government, too, should keep down the cost of entitlement programs. To achieve this objective, the payers must be willing to stop the gamesmanship designed to reduce cash expenditures. Questionable business practices to avoid paying claims—delaying payment or refusing to pay on the basis of technicalities, raising the burden of proof for providers of services, or refusing to divulge the criteria used in determining if a claim will be paid—raise ethical questions.

Those who shape public perception and understanding, the politicians, most certainly must be involved. These are the folks telling the general public that there is a free lunch. This must stop. Instead of telling the public what it wants to hear, they must begin telling the public what it needs to hear: that living a healthy lifestyle and being prudent consumers will reduce their cost of health care. The risk to politicians is that telling the public anything it does not want to hear is usually a prescription for losing an election. These are, however, our leaders, and they should lead!

Finally, the people the health care industry is expected to serve, the public, must take an active part in the dialogue. Expectations will have to be changed. Access, immediacy, and cost will be affected by the compromises that all parties must make. The public needs to take more responsibility for its own well-being.

THE REAL PROBLEM

Understanding the following formula is essential to resolving the dilemma: cost = price × volume. Simply stated, the cost of health care is a function of two variables: the prices charged for the various services provided and the volume of services provided. Until now, attempts to solve the dilemma of high health care cost have focused mainly on price. State-sponsored rate control, global budgets, and similar measures have attacked price and revenue. Volume has not been effectively influenced. It must be understood that the high cost of health care is a function of supply and demand. Those initiatives that have dealt with volume have concentrated on the supply side. The demand side, however, has been almost completely ignored. As an inescapable result, the cost of health care is not being controlled, despite all of the efforts. The demand for health services must be controlled, and a one-sided approach will never succeed.

In reality, the problem is not the high cost of health care. The excessive and uncontrolled demand for health care is the real underlying problem. In effect, we have been treating the symptoms and not the underlying disease. Is it any wonder the patient (the health care system) is getting sicker?

A number of factors influence the demand for health care services and thus drive up cost. The first of these is the broad category of lifestyle choices: the way in which Americans consciously choose to live causes the system to be used more than necessary. When a motorcyclist expresses his constitutional right not to wear a helmet and smashes his bike and his body into a roadside utility pole, the cost of putting it back together again is accounted for as a part of "the high cost of health care."

Abortion is far more costly than contraception as a form of birth control. The cost of abortion services is accounted for as part of the high cost of health care. Diet and exercise are involved as well. Americans overeat and underexercise and wonder why heart disease is the leading cause of death. The American public seems bent on mistreating the body for 40 or so years and then relying on transplants and other costly high-tech interventions to make everything right. "Life in the fast lane" is an expensive proposition. The public needs to recognize this fact. Again, the cost is accounted for as part of the high cost of health care.

When a 14-year-old can walk into a school with a loaded handgun and kill some classmates, the cost of that social problem adds to the "high cost of health care." As a society, behavior problems have been "medicalized." Spouse abuse, child abuse, alcohol and drug abuse, and a host of other antisocial behaviors are thought of as diseases. The sense of personal responsibility for one's behavior has given way to a belief that the health care system should treat these diseases. Needless to say, the cost of these aberrant behaviors is accounted for as a part of "the high cost of health care."

Abuse of the medical malpractice insurance system has done wonders to drive up cost. A man and woman look into a mirror and see two very ugly people. They have a baby who looks just like them. They sue the obstetrician for malpractice! A bit of an exaggeration, perhaps, but the example serves to illustrate the fact that the public has come to expect a financial reward as the outcome of almost any event it does not like. It matters not whether the care was properly rendered, but whether the patient likes the result. Tort reform is essential. The losing plaintiff in a malpractice case should be required to pay all of the costs of the winning defendant.

Finally, technology has made significant advances. So much more can be done to heal the human body and to meaningfully extend life. These advances justifiably cost more—and they are worth it. As with most other

things in life, there is abuse, which adds needless cost to the nation's health care bill. But the benefits of technological advances far outweigh the cost.

WHAT IS REALLY NEEDED?

Two elements must be blended together to produce an effective lasting solution: a national health policy and leadership at the local and national levels to develop, implement, and maintain it. A national health policy must be developed to reduce needless demand, promote healthy lifestyles, mandate preventive care, eliminate excess capacity, promote basic insurance coverage, potentially provide coverage for those who cannot afford it, and protect against catastrophic loss.

How often does the general public present at the hospital emergency department with a cold or upper respiratory tract infection? Cases like these belong at the drugstore or perhaps at a general practitioner's office or urgent care center, but certainly not an expensive emergency department. How much cosmetic surgery is really necessary? This kind of needles demand fails to improve the health status of Americans but succeeds in adding to the high cost of health care. Healthy lifestyles will allow Americans to reduce the demand for health care; less demand translates into less cost. Preventive care has been shown to be far less expensive than interventional, reparative care.

The excess capacity in the delivery system must be eliminated. Too many hospitals are operating at an occupancy rate that cannot be justified. Operating at occupancy rates that are well below 70% cannot be justified or sustained. Rather than reducing the number of beds in each hospital, there need to be fewer hospitals. This approach eliminates more cost and reduces individual hospital capacity. The difficulty lies in selecting the hospitals to close. Most hospital executives would support hospital closure, so long as the hospitals chosen for closure are someone else's. With so many empty beds in the civilian sector, can a separate, parallel Veterans Administration Medical System be justified? If the idea is to provide for the brave men and women who put their lives on the line for the country, why not give them a "gold" card and let them use whatever hospitals and doctors they want—just like everyone else?

As a nation, basic health insurance coverage and protection against catastrophic loss should be made available. A basic level of coverage should be available to all citizens, with expanded coverage available to those willing to pay for it. There should be some form of "stop loss" protection against catastrophic illness, but it should be structured in a way that

avoids the everything-for-everyone, one-size-fits-all dilemma. The role of government should be limited to encouraging, perhaps mandating, others to provide the insurance coverage as opposed to being the insurer itself. Instead of Medicare and Medicaid being payers, the government should issue vouchers so individuals can buy coverage in the marketplace that makes sense for them.

The second, and perhaps most critical, element is leadership at both the national and local levels. Leadership is needed at the local level because the creative solutions necessary to achieve success are best developed locally to meet the needs of a diverse population as opposed to a uniform solution in which everything is either black or white with no shades of gray. The role of national leadership should be to develop a national framework on which effective local solutions will be assembled. Local experimentation can provide valuable lessons and pathways to enhancements that a single countrywide approach cannot.

The leadership agenda must make meaningful, sustainable, and realistic cost containment a high priority. While the high cost of health care is largely a result of demand for services, providers must make sure that each unit of services is delivered at the lowest possible cost. This has not been a priority. Systems available in other industries could be "borrowed" and adapted to health care, but there has been a reluctance to do so.

Leadership is needed to involve all the parties: those demanding care, those receiving it, and those paying the bills. All will need to compromise so a solution can be achieved, but none will be willing to be the first to compromise. Leadership must force the necessary compromises while making sure that none of the parties is disadvantaged.

If an effective, lasting solution is to be achieved, a fundamental change in the public's perception of the health care system is essential. A program of public education is key. America's leaders must be willing to tell the public what it must hear, not just what it wants to hear. Leadership is needed to convince the public that health is the responsibility of the individual, not the system. If an effective, lasting solution is to be achieved, leadership is needed to help make the difficult choices that must be made. Leadership is needed to rally everyone's support. Americans have grown accustomed to instant gratification, and leadership must force the focus to be on the long term as opposed to the short term. The problems with the health care system of the United States did not spring up overnight, and the solutions will, likely, not spring up overnight either. Further, because the solutions will be somewhat painful, leaders must "stay the course," or else one set of problems will merely be exchanged for another.

THE MANAGEMENT BALANCING ACT

As health care managers begin to focus more and more on financial results (the "bottom line"), it is vitally important to remember what health care is about: the provision of health services to the public. Survival requires a balance between the dictates of the business and financial reality and the clinical and service imperative.

The delivery of health services without regard for the financial aspect invites disaster; likewise the fixation on dollars and cents to the exclusion of concern for the clinical aspects is equally disaster prone. Balance requires understanding—understanding by those involved with caregiving of the financial impact of their actions and understanding by those involved with the finances of the effect their decisions have on the delivery of care.

The two disciplines can be combined in such a way as to provide high-quality, cost-effective health care. This is the challenge to managers. Meeting the challenge will mean success, both for managers themselves and for their organizations. This text will help managers meet that challenge.

NOTES

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Chapter 2

BASIC BUSINESS AND ACCOUNTING CONCEPTS

In order to run a business successfully, one must understand the basic business model, the drivers of the business. The same is true in health care. How does the physician practice operate from a business standpoint? What causes a hospital to be successful? How can an imaging center make money?

From a business standpoint, it all begins with volume. As depicted in Figure 2.1, volume leads to revenue for the organization. Revenue, in turn, allows the organization to hire and pay staff and purchase supplies and equipment to be used in providing the services. Profits result when revenue is greater than operating expenses. The profit can be used to make investments in new programs, buy equipment, construct facilities, and increase the capacity of the organization. This allows it to generate even more volume. The resulting upward spiral leads to a growing, successful organization.

Two real-life success stories help illustrate the benefits of growing business volume. The turnaround of what was then Baltimore City Hospitals (now Johns Hopkins Bayview Medical Center) was accomplished by growing admissions, and the associated revenue, by as much as 20% a year. The former municipal hospital had lost $70 million over a 10-year stretch before a three-member executive team from Hopkins accomplished the turnaround. The focus of the team was on volume growth and selective investments in staffing, renovations, and program development. Costs were increased to achieve improved operating functionality, but revenues grew significantly faster. The team was able to get black ink on the bottom line within nine months. A similar turnaround was

Figure 2.1
The basic business model in health care begins with volume—providing services that patients want. Lacking this, the organization cannot succeed.

accomplished at Newton Wellesley Hospital outside Boston by a newly appointed executive team that stressed new program development to grow the top line while controlling costs and boosting quality. In both cases, dramatic results were achieved as a result of volume growth that drove an increase in revenue.

Keeping track of business activity is the role of accounting. It is the art of collecting, analyzing, and recording; summarizing and presenting; and interpreting financial and operating data. This is done to support the information needs of audiences that are both internal (the leadership and management of the organization) and external (the public, stockholders, stakeholders, and others with a vested interest in the organization).

All of the organization's transactions are collected and analyzed to understand their impact on the financial condition of the business. Then,

they are recorded in monetary terms in the various books and records of the organization. The financial statements of the organization and the various internal performance reports are prepared using the data that have been recorded.

A few basic definitions will help in understanding the practice of accounting. *Assets* represent those items of value with an estimated life of greater than a year to which an organization has legal title or in which a business possesses an interest or claim. Examples of assets include such things as cash and investments in securities, accounts receivable, inventories of parts or supplies, expense items paid in advance, equipment, and facilities.

Liabilities consist of items owed by the organization and include such things as accounts payable and long-term debt. *Equity* represents either the claims of the owners or, in a nonprofit organization, the net asset value (assets – liabilities). *Revenue* is the amount paid for the organization's services during the accounting period. These could include room and board charges, lab and imaging fees, and physicians' professional fees. *Expenses* include such items as salaries and wages, fringe benefits, supplies, interest on debt, and deprecation of assets.

ASSET VALUATION

The two most important assets in terms of balance sheet valuation are the accounts receivables and the facilities and equipment. Health care providers seldom require payment at the time of service. Instead, bills are sent to insurance companies, to Medicare and Medicaid, or to individuals who are responsible for their own bills. Providers are seldom paid the face amount of the bills they render. Discounts accrue to large payers like Medicare and Medicaid. Some patients cannot afford to pay and are given charity discounts. Others refuse to pay for one reason or another, and this results in a bad debt. As a result, in order to accurately display the value of the receivables on the balance sheet, an analysis must be prepared to determine their realizable, or "net," value.

To determine the realizable value, an aging analysis is prepared. This examines how old the outstanding receivables are and combines that information with collection probabilities to determine approximately how much will actually be collected. This amount is the realizable value of the receivables. Table 2.1 shows such an analysis.

Nominally, the receivable has a value of $11,910,000. But how much is it really worth? To answer this important question, the amounts are separated into buckets based on the amount of time that has elapsed since the

Table 2.1
Accounts Receivable Aging Analysis

Accounts Receivable Balances	Total	0–30	30–60	60–90	90–120	120–150	150–180	>180
Program number 1	$9,050,000	$2,000,000	$2,000,000	$1,500,000	$1,800,000	$1,000,000	$500,000	$250,000
Program number 2	1,706,000	1,000,000	130,000	120,000	120,000	110,000	111,000	115,000
Program number 3	1,154,000	210,000	250,000	194,000	150,000	130,000	120,000	100,000
Total	$11,910,000	$3,210,000	$2,380,000	$1,814,000	$2,070,000	$1,240,000	$731,000	$465,000
Probability of collection		98.00%	95.00%	90.00%	85.00%	80.00%	60.00%	45.00%
Accounts receivable value	$10,438,750	$3,145,800	$2,261,000	$1,632,600	$1,759,500	$992,000	$438,600	$209,250

charges were billed. The logic is that the older an account becomes, the greater the probability that it will not be paid either entirely or in part.

First, the receivable is broken into buckets based on the number of days that have elapsed since it was originally billed. In this case, of the $11,910,000 of total accounts receivable, $3,210,000 is less than 30 days old. The probability of collecting that amount is estimated to be 98%. In the far-right column in Table 2.1, $465,000 is greater than180 days old and the probability of collecting it is estimated to be only 45%. When the probability rates are multiplied by the receivable amounts in each of the buckets, the estimated value of the receivable can be determined. In this case, it is estimated that the $3,210,000 of receivable that is less than 30 days old will likely result in a collection of $3,145,800 (98% of the original amount). Similarly, of the $465,000 that is greater than 180 days old, the estimate is that only $209,250 will probably be collected. When all of the buckets are summed together, the analysis indicates that the receivable is likely worth only $10,438,750.

The value to be reported on the balance sheet is $10,438,750. But in the interest of full disclosure, it is often reported broadly as shown in Table 2.2. Both the gross amount and the net amount are shown along with the associated allowance for those accounts that may not be collected in full or in part.

The importance of this receivable valuation analysis cannot be understated. Overstating their value or understating it can result in an overstatement or understatement of company profits. It is possible to manipulate the profit picture based on the valuation. For this reason, independent accountants carefully review the analysis and the receivable valuation as part of the annual audit.

Another high-value asset that must be properly valued on the balance sheet is the facility and equipment asset. These assets become expenses as they are "consumed" in the normal conduct of business. A new CT scanner is partially consumed each year as it is used to generate business volume and revenue. From an accounting standpoint, it is important to recognize this consumption and, as well, associate the cost of consuming the scanner with the revenue activities of the organization. The accounting technique that accomplishes this is called depreciation (for property, plant, equipment

Table 2.2
Accounts Receivable

Accounts Receivable	$11,910,000
Less Allowance for Uncollectable Accounts	1,471,250
Accounts Receivable – Net	$10,438,750

like the CT), amortization (for intangible assets like the value of a brand name), and depletion (for natural resources like oil and natural gas).

Four main methods are used for depreciating plant and equipment assets. The straight-line method charges an equal amount to each accounting period benefited. The sum of the years' digits and the double declining balance methods, referred to generically as accelerated depreciation methodologies, apportion a higher percentage of depreciation to the earlier years of an asset's life and smaller amounts to the later years. The units-of-production method depreciates assets using some measure of output. Using this method in a hospital, a CT or MRI might be depreciated using the number of scans performed as opposed to an amount per month or per year. An organization's finance department will determine which method is the best for it to use.

Depreciation expense is balanced by accumulated depreciation. The expense is reported on the operating statement and is used in the calculation of profits or losses. Accumulated depreciation, on the other hand, is the amount of annual depreciation that has been accumulated thus far in the life of the asset. Once the asset is fully consumed or fully depreciated, the accumulated depreciation will equal the asset acquisition cost less any salvage value. The salvage or residual value of an asset is the amount for which the asset can be sold at the end of its useful life. This value is used in all of the depreciation formulas except the double declining balance methodology. The depreciation formulas are shown in Table 2.3.

To see how these various methods work, consider the example of Memorial Community Hospital that on January 1 purchased a new lab instrument for $65,000. The estimated useful life is five years and it has a salvage value of $5,000. The instrument will perform 100,000 tests over its life (14,000 in the first year; 26,000 in the second; 28,000 in the third; 12,000 in the fourth; and 20,000 in the fifth). The depreciation for the instrument would be calculated as shown in Table 2.4. The annual depreciation amount will be slightly different depending on the method chosen by the organization.

Accelerated methods of depreciation are customarily used by for-profit or taxable organizations as a way to defer taxes. This is because the higher amounts of depreciation in the early years reduce profits in those years and defer them to the later years when the depreciation amounts are smaller. Although the same amount of depreciation will be recorded and the same amount of profits realized over the years, the taxes on those profits are deferred to the future when the value of a dollar is less.

When a long-term operational asset is purchased during a year, depreciation is taken for a partial year only. The amount of depreciation is usually calculated as a percentage of the year; that is, if an asset is purchased on April 1, nine-twelfths of a full year's depreciation is taken, no matter

Table 2.3
Depreciation Formulas for Facilities and Equipment Assets

Depreciation Method	Formula
Straight Line	(Cost of the Asset – Salvage Value) ÷ Asset Life
Sum of the Years' Digits	(Years of Asset Life Remaining ÷ Sum of the Years' Digits) × (Cost of the Asset – Salvage Value)
Double Declining Balance	((1 ÷ Life in Years) × 2) × (Cost – Accumulated Depreciation)
Units-of-production	(Number of Units Produced in the Current Year ÷ Total Number of Units to Be Produced over the Asset's Life) × (Cost of the Asset – Salvage Value)

which method is used. Some organizations employ a half-year convention: only a half-year of depreciation is taken in the year of acquisition and again in the year of disposition, regardless of the real date of acquisition.

THE PURPOSE OF ACCOUNTING

The accounting process is designed to collect, categorize, and transform accounting data into a usable form. The general-purpose financial statements like the balance sheet and operating statement that are prepared for external users are important outputs of the accounting process. Financial accounting focuses on the information needs of investors, creditors, and others who are interested in the future performance of the organization. These outside parties are concerned with liquidity (a company's ability to pay its current obligations), solvency (a company's ability to pay its long-term debts and other obligations), and profitability (a company's ability to generate revenues in excess of the expenses incurred to produce the revenues).

An accounting standard of full disclosure requires that all relevant information be presented in an unbiased, understandable, and timely manner. Full disclosure of accounting information helps external users better assess the performance of the organization.

APPROACHES TO RECORDING TRANSACTIONS

Two methods are available for recording business transactions. The accrual basis recognizes events (revenue and expense) when they happen.

Table 2.4
Memorial Community Hospital Depreciation Calculations

	Straight Line	Sum of the Years' Digits	Double Declining Balance	Units of Production
Basis of formula	Five-year life	Sum of the years' digits = 15	DDB Rate = 1/5th × 2 = 2/5th = 40%	$60,000/100,000 tests = $0.60/tests
Year 1	$12,000 = ($65,000 – $5,000)/5	$20,000 = (5/15) × ($65,000 – $5,000)	$26,000 = (40% × $65,000)	$8,400 = ($0.60 × 14,000)
Year 2	$12,000 = ($65,000 – $5,000)/5	$16,000 = (4/15) × ($65,000 – $5,000)	$15,600 = (40% × $39,000)	$15,600 = ($0.60 × 26,000)
Year 3	$12,000 = ($65,000 – $5,000)/5	$12,000 = (3/15) × ($65,000 – $5,000)	$9,360 = (40% × $23,400)	$16,800 = ($0.60 × 28,000)
Year 4	$12,000 = ($65,000 – $5,000)/5	$8,000 = (2/15) × ($65,000 – $5,000)	$5,616 = (40% × $14,040)	$7,200 = (0.60 × 12,000)
Year 5	$12,000 = ($65,000 – $5,000)/5	$4,000 = (1/15) × ($65,000 – $5,000)	$3,424[a] = (40% × $8,424)	$12,000 = (0.60 × 20,000)

[a] Even though the calculation would indicate $3,369.60 for the amount of depreciation, $3,424 is used, as that is the amount needed to reach the $5,000 salvage value.

Revenue is recorded when it is earned and expenses are recorded when they are incurred. This method of recording transactions is used when businesses are operating under generally accepted accounting principles, and it the only method of transaction recording upon which an independent audit firm can render an opinion as to its veracity.

The second method of recording events is the cash basis of accounting. Events are recognized and recorded only when the cash changes hands. As a result, revenue is recorded when cash is received and expenses are recognized when cash is paid out. This approach is not subject to generally accepted accounting principles, and independent accountants cannot provide an opinion of any financial statements prepared using this approach.

For most individuals, the cash basis is the most easily understood because most individuals think this way in their day-to-day lives. They recognize revenue (their personal income) when they are paid. They recognize expenses when they make a payment. The business world, on the other hand, relies solely on the accrual basis.

Some simple transactions can help illustrate the difference between these two approaches. Consider the following expense-related events taking place in the months of March, April, and May:

On March 10, $1,000 of expense items are ordered. On March 15, a shipment of $600 worth of items arrives, but no payment is made to the vendor. On March 31, the books of the organization are closed for the month of March so interim financial statements can be prepared. On April 10, the final shipment of $400 worth of items arrives, but, once again, no payment is made. At the end of April the books are again closed for the preparation of the interim financial statements. Finally, on May 15, the vendor issues an invoice for the full $1,000 worth of items and it is promptly paid by the organization. No other events occur in May. On May 31, the books are again closed. During March, the business served 60 customers and served another 40 during April. In May, however, they served no customers.

The two different methods of recording these events will result in two very different portrayals of the company's activities. As seen in Table 2.5, the accrual basis accurately records the expenses in the months in which the supplies were received and used. But the cash basis approach misstates the business activities. It shows no expense transactions in March and April, thereby understating expenses. Then, in May, it rebounds and overstates company expense by recording $1,000 in a month in which no expense items were received or used.

The use of accrual accounting accurately matches financial and business activity in a way that analysis would be able to identify correlations and relationships between, for example, business volume and expenses.

Table 2.5
Accrual and Cash Basis Recording of Expense Transactions

Month	Accrual Basis Accounting	Cash Basis Accounting
March expense	$600	$0
April expense	$400	$0
May expense	$0	$1,000
March cost per customer	$10	$0
April cost per customer	$10	$0
May cost per customer	–	Infinite value

Table 2.6
Accrual and Cash Basis Recording of Revenue Transactions

Month	Accrual Basis Accounting	Cash Basis Accounting
March revenue	$1,000	$0
April revenue	$1,400	$0
May revenue	$0	$2,400
March revenue per customer	$10	$0
April revenue per customer	$10	$0
May revenue per customer	–	Infinite value

Cost per customer, for instance, can be calculated accurately and provide valuable insights in comparing this business with other similar companies and competitors.

Similarly, these two approaches record revenue differently, as shown in Table 2.6. Again, consider the following revenue-related events taking place in the months of March, April, and May:

One hundred customers are seen throughout March and invoices amounting to $1,000 for services are sent to them on March 25. No payments are received in March. In April, services are provided to 140 customers that amount to $1,400 and, once again, invoices are mailed out, but no payments are received. Finally, in mid-June, payments totaling $2,400 are received. No other customer activity occurs in May.

Again, the use of accrual accounting accurately matches financial and business activity. Revenue is properly recorded in the month in which

there was business activity. And while the cash basis understates financial and business activity in March and April and overstates them in May, the accrual basis properly matches time, money, and activity.

BASIC TERMINOLOGY

In order to carry on a proper conversation with finance staff, it is essential that non-financial managers understand some basic finance terms and avoid confusing them so as not to lose credibility.

"Revenue," sometimes called charges, is the term applied to funds derived from the provision of goods or services. The fee charged by a physician for an office visit, a hospital's bill for an invasive procedure, or the price paid for a prescription at a pharmacy is considered revenue. Gross revenue is what is billed for the services, and net revenue is what is collected. In health care settings, net revenue is customarily far less than gross revenue except for certain instances where payment is required before service is rendered. Laser vision correction is one example of this. The procedure is not covered by insurance, and the patient is expected to pay directly. If payment is not made, the procedure is not performed. Concierge physician services are similar to this. In this instance, the patient pays a flat amount per month and in return enjoys having a physician who has time to pay attention to important details, 24/7 access to the physician, including nights and weekends, same-day or next-day appointments, and more face-to-face office time with the doctor. Insurance is not accepted. Both physicians and patients like this arrangement. Physician office costs are reduced because they do not have to deal with billing and insurance company bureaucracy. Patients appreciate the fact that physicians charge less in a no-insurance-accepted environment.

"Expense," sometimes referred to as cost, is the term given to the cost associated with providing goods and services: salaries, benefits, supplies, depreciation, interest, and so on. For the most part, these are cash items, but depreciation and amortization are expenses that do not require a cash outlay.

Profit, or loss, is the amount remaining when all the expenses of running a business are deducted from the revenue. A business that has $1,000,000 of revenue and $750,000 of expenses would record a profit of $250,000. Conversely, if a company had revenue of $750,000 and expenses of $1,000,000, it would record a loss of $250,000. Typically, losses are recorded with brackets around the amount to easily distinguish them from profits. A loss of $250,000 would be written as ($250,000).

An expenditure is an outlay of cash for any reason. While the terms sound very similar, do not confuse expenditure with expense. It is entirely possible

to make an expenditure for something other than an expense. A payment for purchase of a lab instrument is an expenditure but not an expense. Making a payment to the bank to retire debt is not an expense but rather an expenditure. It is a reduction of a liability. Conversely, an expense does not necessarily involve an expenditure. The depreciation of a company's assets is an expense, but it does not involve an expenditure. The expenditure took place in the, perhaps distant, past when the assets were originally purchased.

Revenue, the money flowing in, is not the same as profit, the money retained after covering the expenses. Profit and income are not the same thing. Income is what is coming in. Net income, very similar sounding, is the same as profit because it carries the notion of net—what is left over after the expenses are taken care of.

Two other terms that should not be confused are cost efficiency and cost reduction. Cost efficiency involves getting the most from the costs incurred in providing goods or services. Total cost is not lowered but instead is used more effectively, more efficiently. Cost reduction, on the other hand, involves cutting expenses. This can lead to dysfunctionality and unfavorably affect the organization's bottom-line performance. Both cost efficiency and cost reduction are discussed at length in Chapter 3, Cost and Cost Behavior.

Do not confuse cost and charges. Both have been defined earlier, but clinicians and others writing in the clinical literature often confuse them. This happens because of the changing nature of cost and charges. As depicted in Figure 2.2, the costs the hospital or other provider incurs are used as the basis for the charge, the bill, for the services. When that bill is sent to the payer (an insurance company, Medicare or Medicaid, or the patient), it changes from charge to cost and becomes the cost to the payer.

Consider the example of a patient who enters the hospital for a CABG procedure. The hospital incurs costs to provide this service. Assuming those costs hypothetically are $20,000 and that the hospital marks up its costs to cover bad debts, charity care, and discounts, the bill might be $25,000. Now answer this simple question. How much did the CABG cost? There are two answers. It cost the hospital $20,000 but cost the payer $25,000.

Often, those writing in the clinical literature focus on the cost to the payer and assume it is the same for the provider. So when they assert that they can reduce hospital cost by reducing the length of time spent in the hospital, what they are really saying is that they can reduce the cost to the payer. The charges, the revenue of the provider, are also reduced, but the provider's cost does not really go down because most provider cost is fixed in nature. In effect, they are misleading their audience by their assertions

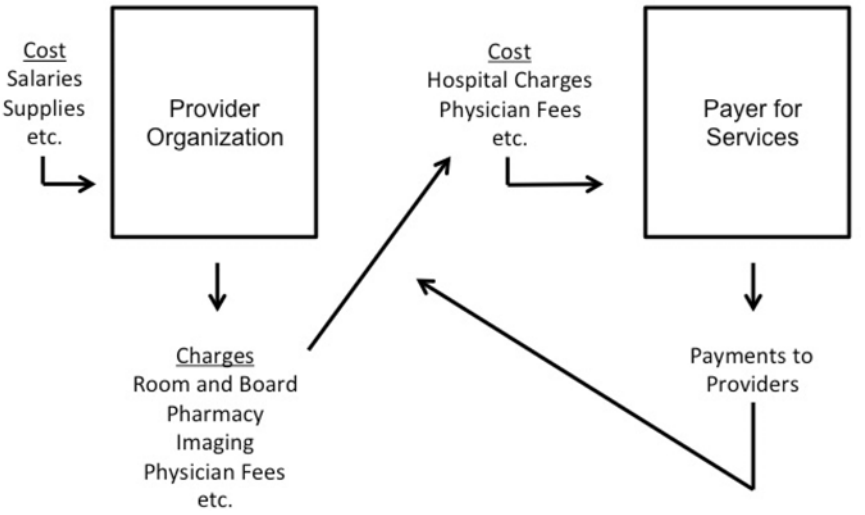

Figure 2.2
What enters provider organizations as cost (salaries, supplies, etc.) exits as charges. In turn, the charges enter the payer organization as cost. So whose cost is being described in the literature? This confusion often leads to a misunderstanding of how quality improvement initiatives benefit provider organizations.

about cost. Hospital costs do not drop, but hospital revenue does. What CEO wants to be told his or her cost will drop only to learn it was the revenue that went down?

For this reason, the clinical literature that purports to describe hospital cost reduction opportunities should be looked at with a wary eye. This subject is covered in greater depth in Chapter 15, The Business Case for Quality and Patient Safety.

In order to record transactions properly as well as to understand what is reported, the practice of accounting is guided by a number of principles or conventions that govern the recording and reporting of the various transactions.

BASIC ACCOUNTING CONCEPTS

The *Money Measurement Concept* requires that a record be made only of those facts that can be expressed in monetary terms. This provides a common language in expressing business events. For this reason, market share is not given a value in the books and records of the organization.

The *Concept of the Going Concern* specifies that unless there is good evidence to the contrary, accountants must assume that a business will continue to operate for an indefinite period of time. Consequently, assets that are used to generate business are recorded at their acquisition cost and not at their current value to an outsider interested in purchasing them. The land on which a hospital has been built will likely have a higher current market value than its original acquisition cost. But to realize this increased value, the hospital would have to sell the land and presumably go out of business to realize the increased land value. Thus, the increased value cannot be realized, and thus, it is not recorded in the books and records of the organization.

Closely related to the concept of the going concern is the *Cost Concept*. This stipulates that an asset (buildings, equipment, etc.) is ordinarily recorded at its purchase price (its cost), which becomes the basis for all subsequent accounting for the asset. Do not mistakenly think that the value at which the asset appears on the reports is its actual market value. While cash, certain investment assets, and accounts receivables are recorded and reported at their actual or estimated market value, this is not the case for all assets of the organization. Accounts receivable represent one of the largest assets of a health care provider organization; and their value, the amount actually expected to be realized as opposed to their face value, must be properly reported in the financial statements. Similarly, property, plant, and equipment assets that have long, but limited, service lives are systematically reduced over the course of that life by a process called depreciation. This gradually reduces the value of the asset and transforms it into a cost of operating the business.

SUMMARY

Understanding the basic concepts of any business, the basic business model, and the rules and conventions that guide accountants in recording and reporting the business activity is essential for any manager. Success in any business requires an understanding of how that business works, how the actions of the manager affect volume and throughput, and how these, in turn, influence revenue, profits, and capacity. Knowing how accountants think and how they look at business activity will assist managers in discussing business opportunities with the finance staff. It allows for cooperation and collegiality based on a common understanding of business and the role of accounting.

Chapter 3

COST AND COST BEHAVIOR

In order to be successful as a manager, it is important to understand the behavior of the various costs associated with the services provided. What are the types of costs to be managed? What drives these costs to rise or fall? How does cost behavior affect business strategy and vice versa? How much influence can a manager have on the behavior of these costs? And based on the amount of influence, what actions should a manager take? What are the best strategies to employ to improve cost performance?

UNDERSTANDING COST BEHAVIOR

In health care, the costs of providing services include salaries and wages paid to workers, the fringe benefits (life insurance, tuition reimbursement, pension contributions, etc.), supplies and services, interest on borrowed money, and depreciation. These costs generally fall into one of three categories: fixed, variable, or semi-variable.

Fixed costs are those that are held constant regardless of the amount of business volume. Consider, for example, the salary costs of a clinic staff. Whether the clinic provides services for 1,000 patients each month or 1,050 patients, the staff will be paid.

Variable costs, on the other hand, rise and fall as business volume rises and falls. In an immunization clinic, being operated by a city health department, for example, one would logically expect that if the volume of patients being immunized rose by 5% the cost of vaccines would also rise by 5%. If the number of patient meals prepared in a hospital kitchen dropped by 3%, the cost of food would also be expected to drop by 3%.

Semi-variable costs are a bit of both. They are fixed over a range of volume, then vary sharply with a change in volume, and then become fixed again. Often they are called "step costs" because, graphically, they resemble a set of steps (Figure 3.1). Staffing is an example of a semi-variable

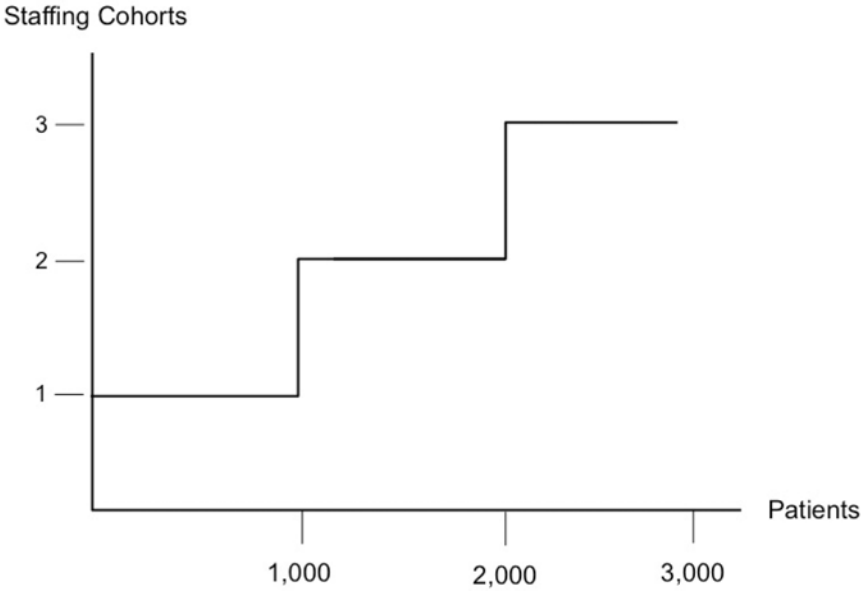

Figure 3.1
The movement of semi-variable costs resembles steps, thus the term "step costs." They remain fixed over a range of volume, become variable as volume passes a threshold, and then become fixed again until the next threshold is reached.

cost. A small physician practice, for example, consisting of one physician, one nurse, and one technician is able to accommodate a panel of 1,000 patients. If that panel of patients were to grow to 1,200 patients, staffing would double but would then remain at that level until the volume reached 2,000 patients. If the size of the practice were to grow again beyond the 2,000 patients, a complete third cohort (physician, nurse, and technician) would be needed. This happens because it is not possible to expand the staff by the fraction by which the panel of patients has grown. This is referred to as a diseconomy of scale. Adding volume makes each unit of volume more expensive. Conversely, if staffing was in place to accommodate a panel of 1,400 patients, volume growth from a base of 1,000 patients to 1,200 patients would not require any added staff. This would be considered an economy of scale. Adding the volume in this case makes each unit less expensive.

While semi-variable costs cannot be disregarded entirely (they are usually associated with a significant change in the scope of business), managers usually deal with just two kinds of costs: fixed and variable.

THE NATURE OF OPERATING COSTS

As shown in Table 3.1, the operating costs of health care institutions are, for the most part, fixed. They consist mostly of labor costs that can range as high as 65% to 70% at the organizational level and even higher in individual departments. While some claim that labor is a variable cost, the test of that assertion is this: can the workers be dismissed for short periods of time without pay if volume drops? While this might be possible in some locales, given the overall shortages in the health care labor market, workers dismissed without pay are likely not to return. While predominantly fixed, some labor truly is variable—overtime wages, travelers and agency staff, float pool, per diem staff, and so on—and can be made to vary up and down with volume. Supplies and services also lean heavily to the fixed side of the ledger, with perhaps a third of supply costs being variable. Finally, interest expense (the cost of borrowing money) and depreciation expense (the cost of consuming fixed assets) are entirely fixed.

As a result of these varying proportions by expense category, overall, the costs of operations are approximately 90% fixed. Some variation from one institution to another is certainly possible, but the important message is that health care is a high-fixed-cost enterprise. This reality drives business success.

Understanding this high-fixed-cost proportion is essential to good business operation and the development of successful business strategies. If an organization with high fixed costs begins to experience falling volume, the impact on the bottom line is significant and immediate. The revenue goes away instantly while the costs are reduced only a small amount. Take, for example, the business illustration described in the following scenario.

High Hope Health Company is running at just above breakeven, having a modest profit of $100,000. Revenues are $1,100,000 and operating costs consist of $650,000 of staff costs, $150,000 of supplies and services, and $200,000 of

Table 3.1
The Proportion of Fixed and Variable Costs by Category

Expense Category	Total Cost	Fixed Portion	Variable Portion
Salaries and fringe benefits	65%	60%	5%
Supplies and services	15%	10%	5%
Interest	10%	10%	0%
Depreciation	10%	10%	0%
Total operating costs	100%	90%	10%

interest and depreciation. A small drop in volume, just 5%, will have a devastating impact on the bottom line. Revenues will decline by $55,000, while expenses, which are 90% fixed, decline by only $5,000, thereby reducing the organization's profit to $50,000.

But if a similar organization with similar high fixed costs pursued a strategy to grow its volume, the impact would be positive and significant.

Success Health Practice achieves an annual profit of $100,000. Similar to High Hope Health, its revenues are $1,100,000 and operating costs are $1,000,000. Employing a business strategy to increase volume, Success Health is able to attract 5% more visits each year. As a result, revenue grows by 5% ($55,000) while expenses, which are 90% fixed, grow only slightly ($5,000), thereby providing a $50,000 boost to the organization's bottom line—a 50% growth in profits!

These two organizations perform this way because of the nature of business volume, revenue behavior (entirely variable), and operating cost behavior (largely fixed), as illustrated in Figure 3.2.

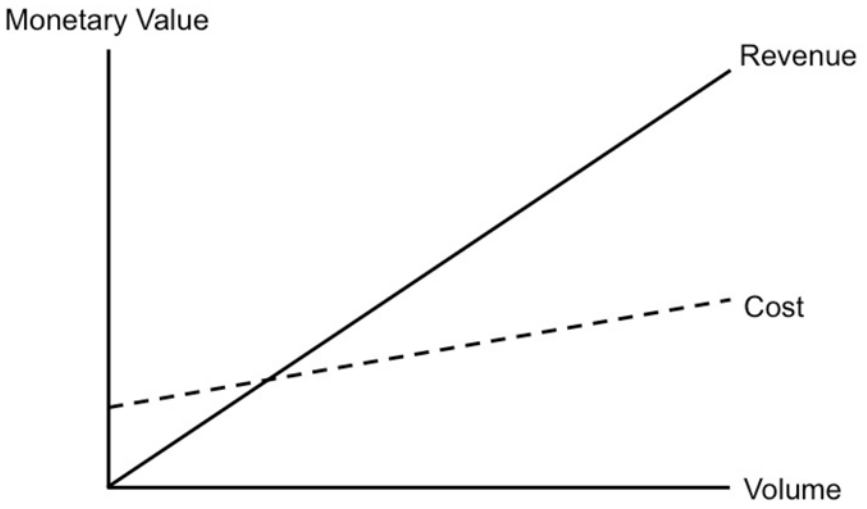

Figure 3.2
As volume rises, revenue grows in direct proportion to the volume because it is 100% variable with volume. Cost, on the other hand, rises and falls at a far slower rate because is it largely fixed. Knowing this allows for the development of better strategies to guide the business.

Knowing how costs behave, understanding the influence a manager can have on those costs, and understanding the relationships between costs and revenue and costs and volume will allow managers and leaders to select appropriate strategies for controlling and/or reducing costs and for seeking out appropriate levels of business volume to achieve operating efficiencies and improve bottom-line performance.

IMPORTANT COST CONCEPTS

The cost of a service can be described in four different ways: Average cost, marginal cost, opportunity cost, and standard cost. Each provides an answer to a different question and each is designed for a different purpose.

Average cost identifies the cost of producing a single unit of work output—the average unit. To determine average cost, the total cost of providing a service is divided by the total number of services provided. In the ICU, for instance, the cost per case is determined by dividing the cost of running the ICU (salaries, fringe benefits, supplies, services, etc.) by the number of cases cared for. This provides an overall approximation of the cost per unit of service, which is essential if comparisons are to be made to other providers. Is the cost higher or lower than other providers? If higher, what causes that? Can the unit cost be lowered in order to be more competitive? Are economies or diseconomies at play? Average cost is useful in determining competitiveness and the direction of unit performance.

Marginal cost, on the other hand, looks at the cost of producing not the average unit, but rather the very next unit of output. It is calculated by dividing only the *variable* costs associated with the service by the total number of services provided. This view of cost is essential for making sound decisions about incremental volume. Only the variable costs are used in the calculation because only the variable costs will rise with the addition of the next unit of service. The fixed costs are already present, and no added fixed costs will be added in order to accommodate the new unit of service.

Table 3.2 shows a typical department's costs and the calculations of its average and marginal costs. Note that the calculation of average cost in the far-right column uses all the cost ($1,200,000), while the calculation of marginal cost in the middle number column uses only the variable costs.

In health care, well-intentioned decisions are often based on average cost, and these decisions are often incorrect. Consider a hospital whose

Table 3.2
Average versus Marginal Cost

	Total Costs	Marginal Cost Logic	Average Cost Logic
Fixed operating costs	$1,000,000		$1,000,000
Variable operating costs	$200,000	$200,000	$200,000
Total operating costs	$1,200,000	$200,000	$1,200,000
Volume of services (visits)	20,000	20,000	20,000
Marginal cost per visit		$10.00	
Average cost per visit			$60.00

average cost per case in the emergency department (ED) is $1,000. If a patient were to present with merely a runny nose, would the hospital lose money treating this patient? The conventional thinking suggests that the hospital would be reimbursed perhaps only $15 from the patient's insurance company as a triage fee. Thus, based on average cost logic, the hospital would lose $985 ($1,000 – $15). But in reality, the hospital would profit from this patient. The marginal revenue of $15 is offset by perhaps $1.00 for a dose of an antihistamine, leaving $14 of marginal profit. The decision using marginal cost logic is to welcome the patient. Regrettably, most hospitals look at this patient from an average cost perspective and, erroneously, see him or her as a losing proposition.

Opportunity cost gets at what could be done with resources had they been used in a different way. The person who spends $75,000 for a hot sports car could have invested the money in a collage education instead. Thus, the opportunity cost of the car is the college degree. In the runny nose scenario, the only reason to turn down that patient is if treating the patient with a runny nose blocks a room that might yield even more revenue. The opportunity cost of taking the runny nose is the thousands of dollars of revenue associated with a potential heart attack or trauma case. The costs of the ED are already in place, so the question becomes how best to use the costs, how best to use the ED resources: with a runny nose, a trauma case, or no case at all?

Using average cost logic to decide if a losing business should be expanded is also problematic. Consider a hospital that is losing money. It has an average cost per case of $12,000, of which $10,000 is fixed cost and $2,000 is variable cost. The hospital's net revenue is $10,000 per case, resulting in a loss of $2,000 per case. If an opportunity to add 100 cases

Table 3.3
Thinking Average versus Marginal

	Average Cost Logic	Marginal Cost Logic
Net revenue per case	$10,000	$10,000
Operating cost per case	12,000	2,000
Profit or (loss) per case	($2,000)	$8,000

presented itself, should the hospital defer those cases? Regrettably, some decision makers would because "we lose money on every case." But as Table 3.3 shows, the use of average as opposed to marginal cost logic can lead to poor decisions.

In this case, the hospital has an opportunity to improve financial performance by taking the 100 cases that would have contributed $800,000 to the bottom-line results. The marginal cost of each of these incremental cases is only $2,000 (the variable cost), which the net revenue per case easily covers, leaving an $8,000 profit on each case. While the decision to take these cases will not eliminate the overall bottom-line loss, it will, nonetheless, help the situation.

Having an understanding of cost behavior and the basics of a volume-driven business, managers and leaders are better able to make correct decisions that benefit the institution. Lacking this understanding, they are likely to implement strategies that will not serve their institutions well.

The fourth and final way to describe cost is *standard cost*: the cost that *should be* incurred to produce a unit of output. This is the most precise determination of product-specific cost and is the most effective method for controlling cost. Standard costs are used throughout manufacturing to help control the cost of products rolling off the assembly line. Each product is studied to learn the exact, appropriate amount of resources needed to produce it. Managers must carefully explain deviations from these standards of resource use. In health care, a budget for the operating rooms, for example, is developed before the year begins and is based on the number of cases and historic amounts of resource cost. It's a reasonable way to control spending. In manufacturing, no such budget would be prepared. Instead, once the number and types of cases are known, standard amounts of resources would be "earned" by the department, and this standard amount would be compared to actual resource spending. An operating room director, for example, would then be expected to explain the reasons for any deviations from the standards.

It is a far more rigorous method of controlling costs and, for this reason, is employed in manufacturing. In that setting, every product is carefully studied to determine its resource load and a "bill of materials" is prepared that forms the basis of the cost standard. The standard can be adjusted up or down as the product is modified, the manufacturing process is altered, or prices for the resources change. Deviations from standard are thoroughly investigated because of their implications for financial performance, product quality, and overall business performance. Standards-based performance is then tied to accountability for manufacturing department managers.

Is such an approach worth implementing in health care? Is it even possible? The answer to both of these questions is a resounding "yes!" One of the best ways to achieve consistent, high-quality care is to follow a predetermined, peer-reviewed, best practice approach and follow it consistently. Such an approach (whether it is called a clinical pathway, a critical path, a protocol, etc., is unimportant) can provide both high-quality and cost-efficient outcomes that can be justified to regulators, payers, the public, and any other group interested in how care is provided and how much it costs. It would be difficult for congress or the Centers for Medicare and Medicaid (CMS) to skimp on reimbursements if providers could demonstrate a lack of waste and argue effectively for fair and reasonable payments for work-based, documented effort and resource use. It is impossible for CMS to deny the existence of something that is thoroughly documented and which results from expert, peer-reviewed efforts.

Manufacturing has been doing this for decades. The information systems exist. All that's missing is the will to borrow proven methods and the willingness to roll up the sleeves and determine the true best practice approach to care. Certainly there are arguments against doing so: each case is different, there are too many diagnoses and complicating comorbidities, it represents cookbook medicine.

FIXED VERSUS VARIABLE COSTS

While semi-variable costs cannot be disregarded entirely (they are usually associated with a significant change in the scope of business), managers usually deal with just two kinds of costs: fixed and variable. The proportion of costs that are fixed or variable will change as volume rises or falls. As seen in Figure 3.3, as the volume rises, the fixed cost remains the same while variable cost rises. As a result, the variable portion of total cost rises right along with volume. Thus, a department such as the operating rooms

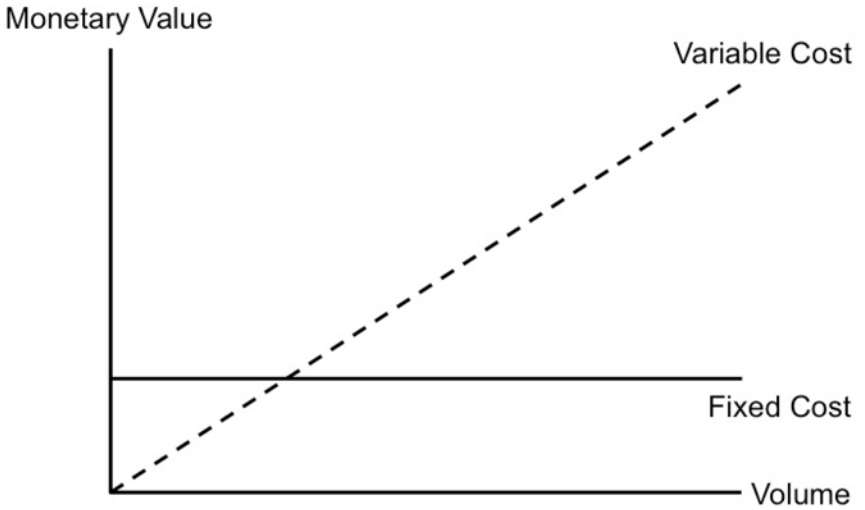

Figure 3.3
The proportionality of fixed and variable costs changes as volume changes. As volume rises, the amount of fixed cost remains constant, but the variable costs increase. This, in turn, changes the proportions, and the department's costs become more and more variable with volume.

may be 50% variable at 1,000 surgical procedures but become 75% variable when the surgical load moves to 2,000 procedures.

REAL-WORLD IMPLICATIONS

Failing to recognize the real proportion can lead to errors in the decision process. Two real-world scenarios illustrate how knowing the fixed–variable split can lead to a smart decision and a successful price negotiation while not knowing can lead to financial disaster.

In Scenario A (Table 3.4), a provider has annual, ongoing patient volume of 400 cases and operating costs amounting to $1,000,000. Those costs are 40% fixed and 60% variable.

An organization approaches the provider with an offer to direct an additional 400 cases in exchange for a discount on the price of services. Currently the provider charges $2,600 per case and agrees to a deep discount, accepting a contract payment of $1,400 per case based on an erroneous assumption that its costs are 50% fixed and 50% variable. As seen in the middle column of numbers in Table 3.4, the provider expects to make a $60,000 profit on this incremental business based

Table 3.4
Real-World Scenarios—Scenario A

	Current Situation	Scenario A Assumption	Scenario A Reality
Number of cases	400	400	400
Variable cost	$600,000	$500,000	$600,000
Fixed cost	$400,000		
Total cost	$1,000,000	$500,000	$600,000
Cost per case	$2,500	$1,250	$1,500
Price per case	$2,600	$1,400	$1,400
Total profit	$40,000	$60,000	($40,000)

on the incorrect assumption that it will incur only $500,000 of added variable costs in providing the services. The reality, as displayed in the far-right column, is quite a bit different. The provider's costs increase by $600,000 because they are really 40% fixed and 60% variable. The fixed costs do not increase, but the variable ones double. As a result, there is a significant loss, and the provider's bottom line drops to zero! The lack of understanding of its costs and their behavior resulted in a bad decision.

In Scenario B (Table 3.5), a similar provider has annual, ongoing volume of 400 cases and its operating costs amount to $1,000,000. The costs are 40% fixed and 60% variable. This provider, however, knows exactly how the costs behave.

An organization approaches this provider with an offer to direct an additional 400 cases in exchange for a discount on the price of services. This provider agrees to a discounted price of $1,600 based on an accurate understanding of its cost profile (40% fixed and 60% variable). As seen in the middle column of numbers, the provider expects to make a $40,000 profit on this incremental business while offering a nearly 40% discount.

The provider now has a combined volume of 800 cases and a bottom line of $80,000. This is quite a difference from the provider in Scenario A and results from the proper understanding of costs and their behavior.

In Table 3.6, note that at the combined 800 case level of operation (the right-hand column), the proportion of fixed and variable cost is quite different from the 400 case level of operation. At 800 cases, the organization is now only 25% fixed and 75% variable. If another such offer were to be received, the organization would need to take this new fixed/variable proportion into account to avoid making an error similar to that shown in Table 3.4.

While any addition of volume should be considered in light of the variable or marginal costs, consideration should also be given to the impact

Table 3.5
Real-World Scenarios—Scenario B

	Current Situation	Scenario B Assumption	Scenario B Reality
Number of cases	400	400	400
Variable cost	$600,000	$600,000	$600,000
Fixed cost	$400,000		
Total cost	$1,000,000	$600,000	$600,000
Cost per case	$2,500	$1,500	$1,500
Price per case	$2,600	$1,600	$1,600
Total profit	$40,000	$40,000	$40,000

Table 3.6
Real-World Scenarios—Post Scenario B

	Current Situation	Scenario B Increment	Post Scenario B
Number of cases	400	400	800
Variable cost	$600,000	$600,000	$1,200,000
Fixed cost	$400,000		400,000
Total cost	$1,000,000	$600,000	$1,600,000
Cost per case	$2,500	$1,500	$1,500
Price per case	$2,600	$1,600	$1,600
Total profit	$40,000	$40,000	$40,000

added volume may have on the fixed costs. Would the fixed office staff need to be expanded? Would space rental cost, normally considered a fixed cost, need to increase because more space was needed to accommodate the added volume? When managers properly understand their costs and know how costs behave, they are able to make sound business decisions. If the provider in Scenario A had known more about its costs and the fixed–variable split, a better, more profitable decision could have been made.

DIRECT AND INDIRECT COSTS

In addition to identifying costs based on their behavior in relation to volume, they can be described based on their location in the process of care.

As the name suggests, direct costs are those incurred in departments that provide direct, hands-on care to patients: the nursing units, imaging, labs, and so on. The costs include all the salaries, fringe benefits, and supplies. Indirect costs, sometimes called overhead, are those associated with administrative and supporting departments like finance, medical records, transport, and maintenance. The distinction is that direct costs can be directly associated with individual patients while indirect costs cannot be so identified. A lab test run on patient Johnson can easily be associated with Johnson. Both the charge and the cost of the test can also be associated with Johnson.

Indirect costs, on the other hand, cannot be associated with individual patients. When the maintenance department repairs a steam pipe, does an individual patient benefit? Its work benefits all patients and its costs are allocated to the departments that provide direct care. Thus, the cost of a lab test includes not only the direct costs of the laboratory, but allocated costs for maintenance, medical records, accounting, billing, executive and administration, legal, marketing, and all of the other departments that do not bill patients directly for their services.

The allocation of the indirect or overhead costs to the direct care departments is accomplished via cost allocation methodologies that will be discusses later in this chapter.

COST ACCOUNTING

One of the major functions of the organization's accounting and finance staff is that of cost accounting—determining the cost of a product or service and providing cost information to support sound decision making. Cost accounting systems exist in most industries and provide accurate information that can be used to determine price or make decisions relative to technology investments, new lines of business, expansion of services, and so on.

In the manufacturing setting, cost accounting systems are prospectively or future focused—what a product should cost to manufacture in the future. This results in a cost "standard," which forms the basis of tight cost control—judging actual cost performance against the standard. If a product costs more than standard, an unfavorable variance results and management must take action to correct the problem. The systems used are extremely precise and are based on studied reviews of manufacturing processes and the costs of resources used in the manufacturing process.

Health care organizations, principally hospitals, also use cost accounting techniques and have invested millions of dollars in automated systems. Unfortunately, they are retrospectively focused—what a service did cost in the past. Further, in determining this historic value, too many averages are used, thereby significantly reducing precision. Because they look to the past instead of the future and develop average cost information as opposed to standard costs, they are of little real value in controlling the use of resources.

The following description illustrates the differences between the two approaches. A patient comes to the hospital for a relatively simple elective surgical procedure. A manufacturing cost accounting system would carefully determine such things as the amount of time the procedure should take, the labor cost involved, and supplies to be used. The result would be a cost standard that could be used to develop a price for the procedure (even being able to quote that price for the payer prior to the procedure) and to manage the resource consumption from admission to discharge. A hospital cost accounting system, on the other hand, would basically divide total costs by total cases and develop an average cost per case. At best, it could calculate an average cost for types of cases—orthopedic, neuro, urology, and so on. Lacking a standard cost, management of resource consumption is less effective. Imagine how much more effective management could be if the OR director knew prospectively what a procedure should cost, could monitor resource consumption against that standard, and could more effectively manage and use the limited resources at their disposal.

Several approaches can be used for gathering and analyzing cost data. Activity-based cost accounting (ABC Costing), the Bill of Materials approach, and relative value unit (RVU) schemes provide detailed data on costs associated with products, procedures, and services.

Activity-Based Costing seeks to assign costs directly to products or services based on the various activities involved. Activities are also used to assign the cost of indirect or overhead centers like finance and billing. Table 3.7 shows the approach. This organization has $200,000 of indirect or overhead cost that must be allocated to its four different services. In allocating this overhead, ABC Costing looks at the proportion of total activity time involved with each service and assigns overhead in the same proportions. Thus, Service A, which accounts for 20.2% of total activity time, is assigned 20.2% of the $200,000 overhead or $40,400. This continues for the other three services until the entire $200,000 of overhead is assigned.

Table 3.7
Activity-Based Costing Methodology
Calculation of Overhead Allocation to Each Service

	Service A	Service B	Service C	Service D	Total
Activity 1 (minutes)	100	150	150	150	
Activity 2	120	120	170	170	
Activity 3	130	130	130	150	
Activity 4	200	200	200	230	
Total time (minutes)	550	600	650	700	
Volume of services	200	100	250	300	
Total minutes	110,000	60,000	162,500	210,000	542,500
Proportion	20.2%	11.1%	30.0%	38.7%	100.0%
Overhead assigned	$40,400	$22,200	$60,000	$77,400	$200,000

The Bill of Materials approach begins with a detailed recipe of labor and supply resources used in a product, procedure, or service. Costs are then associated with each based on the quantities used. This results in a standard cost for the item in question. Overhead is not considered in the development of the standard cost, as demonstrated in Table 3.8. The standard cost for the four services range from a low of $536 for Service A to a high of $1,090 for Service C. These standard amounts can then be compared to actual spending to provide a more rigorous form of cost control.

The listing of the labor and materials associated with each service shown in Table 3.8 is developed based on observation, discussion, and procedural methodology. This forms the basis of a Bill of Materials. It identifies every resource used in each of the services. Based on the amount and cost of those resources, values are assigned. The total of these values is the standard cost for the service. Once the number of cases performed is known, standard amounts of resources would be "earned" by the department, and this standard amount would be compared to actual resource spending. The manager responsible would then be expected to explain the reasons for any deviations from the standards.

Relative Value Unit schemes are similar in approach to the Bill of Materials, also beginning with the listing and valuing of resources by service.

Table 3.8
Bill of Materials Methodology
List and Value of Resources by Service

	Service A	Service B	Service C	Service D
Nursing salaries and benefits	$100.00	$140.00	$255.00	$100.00
Technician salaries and benefits	120.00	100.00	185.00	120.00
Supply item 1	10.00	23.00	78.25	8.25
Supply item 2	20.50	56.00	25.00	32.00
Supply item 3	9.25	76.00	65.00	14.00
Supply item 4	5.25	34.00	32.75	25.45
Supply item 5	7.50	77.00	15.00	63.00
Supply item 6	56.50	22.00	68.00	69.00
Supply item 7	12.40	87.50	95.00	85.30
Supply item 8	5.00	9.90	84.00	47.00
Medication 1	134.60	265.00	75.00	41.00
Medication 2	55.00	105.60	112.00	135.00
Total standard cost	$536.00	$996.00	$1,090.00	$740.00

But instead of developing a standard cost for each service, a common resource-based value is assigned to each procedure or service based on the value of all the resources used in performing the procedure or service. The development of RVUs as part of the development of resource use standards is discussed in Chapter 12.

Two less detailed methods of determining the cost of a product, procedure, or service are unique to health care: the cost-to-charge ratio and the ratio of charges to charges applied to cost (RCCAC). These are merely rough estimation methods based on price and revenue data.

A hospital might identify the charges for a particular surgical procedure and apply a ratio of cost to charges to determine the underlying cost of the procedure. If, for example, the Memorial Hospital's revenues were $25,000,000 and its costs were $22,500,000, it would have a cost-to-charge ratio of 90% ($22,500,000 of cost divided by the $25,000,000 of revenue). Then, if the charges for the surgical procedure were $12,500, the finance department might erroneously, but confidently, conclude that the underlying cost was $11,250 (90% of $12,500). This approach is often used in the clinical literature to identify cost reductions associated with quality improvement initiatives. The fact that charges have been reduced because of a quality initiative does not mean that costs are reduced; they are largely fixed. Regrettably, because of this assumption about the cost-to-charge

relationship, almost all of the clinical literature on the topic of potential hospital cost reduction is inaccurate. An unfortunate consequence of this is that quality improvement initiatives have lost credibility. They simply do not deliver the promised cost reductions for hospitals. This may be why quality improvement has not gained the traction in health care that it has in other industries.

The RCCAC method is virtually identical. In this approach, if the hip replacements at Memorial Hospital accounted for $8,000,000 of the hospital's $25,000,000 of total revenue (32%), finance might, again erroneously, but confidently, conclude that the cost of hip replacements amounted to $7,200,000 (32% of Memorial's $22,500,000 total cost).

MANUFACTURING VERSUS HEALTH CARE

Regardless of the method used, it is interesting to note the differences between health care and manufacturing in their use of cost accounting. In manufacturing, the emphasis is on accuracy. Cost accounting data are used to control manufacturing costs and, thereby, to gain competitive advantage. The data are often used in determining price quotes in response to a request for proposal or request for quote. Often, the cost accounting and industrial engineering disciplines are paired to achieve performance improvement.

In health care, cost accounting grew out of the cost reporting requirements of Medicare and Medicaid, which reimbursed hospitals on the basis of their cost to provide care. As a result, the emphasis was not placed on accuracy, but on cost allocation to maximize Medicare/Medicaid cost and in so doing maximize reimbursement. Unlike its use in manufacturing, cost accounting in health care has no role in controlling costs. And the notion of using industrial engineering approaches to improve performance is anathema.

Manufacturers have tons of cost data and know what everything costs. Health care organizations have tons of cost data but know what nothing really costs. Consider the following example from the auto industry.

A mid-sized car comes with a number of "basics" like brakes and a windshield. But beyond the basics, the customer can order a car with the specific options he or she wishes. Those lists of options can be quite lengthy.

The person interested in buying the car can choose from over 20 options leading to a car that can be uniquely his or hers. Given all the possible

Body type (three types)	Climate control	Cloth or leather seats
Doors (two or four)	Power mirrors	Wheels (three styles)
Bench or bucket seats	Power locks	Antitheft system
Engine size (three sizes)	Remote keyless entry	Tilt steering wheel
Transmission	Power windows	Fog lamps
Forward gears	Power seats (driver/pass.)	Trunk lid cargo rack
Power steering (yes/no)	Sound system	Satellite radio
Power brakes (yes/no)	Head-up display	Navigation system

permutations of colors and options, the number of possible unique cars is an incredibly large number of possible vehicles: 133,373,577,685,028,000,000,000,000,000,000. And yet the manufacturer is able to know how much each will cost to produce and how much it and the dealer are willing to accept as an offer from the potential buyer. This is just one car from a manufacturer who offers several models and sizes (full-size, mid-size, compact, subcompact, SUV, minivan, etc.).

Why is it important for health care organizations to understand this? It suggests that the argument that health care is too complex to know prospectively what any patient's stay will cost is not valid. Good manufacturing cost accounting systems can and do track complex processes with trillions of alternatives and provide extreme granularity with respect to cost and support good control. Health care could do the same. Only the will to do so is lacking.

COST ACCOUNTING VERSUS FINANCIAL ACCOUNTING

Cost accounting and financial accounting are different disciplines. While cost accounting works to determine the cost of a product or service and provide cost information to support sound decision making within the organization, financial accounting focuses on the financial condition of the organization and prepares financial statements (balance sheets, etc.) that report that condition primarily to those outside the organization. Although both are user oriented and rely on accurate basic accounting data, they differ in a number of ways. Financial accounting takes a historic perspective, reporting how the organization performed in the past. Cost accounting considers the past but looks to guide future decisions. Financial accounting, because of the importance of accurate financial statements, makes precise determinations. Cost accounting is able to deal with

order of magnitude or rough estimates. Financial accounting is governed by generally accepted accounting principles (GAAP), the standards that drive financial reporting, but cost accounting need not conform to GAAP. Financial accounting, by its very nature, is conservative. Cost accounting, on the other hand, can be speculative, supporting "what if?" questioning associated with decision making.

ACCOUNTING FOR COSTS

Keeping track of operating costs is essential to running any business. Knowing which departments are incurring costs and for what reasons is essential to manage resources, make performance comparisons, price services, and so on. To do this, most organizations use a series of numbered departments called cost centers where expenses are aggregated. These can be either patient care centers (labs, ICU, ED, etc.) or support centers (accounting, maintenance, medical records, etc.). The way to differentiate these two kinds of cost centers is by the services they provide. Patient care cost centers, sometimes called direct care cost centers, provide services that are identifiable to specific patients and are itemized on the bill. Overhead cost centers provide services that cannot be identified to specific patients and are not itemized on the bill. Rather, they are allocated to the patient care cost centers as a way of getting their costs onto the bill.

Within each center, a series of line item accounts delineates the costs into categories for salaries and fringe benefits (including lines for department managers, nurses, technicians, and clericals) and supplies and services (office supplies, medical supplies, etc.). Figure 3.4 shows a typical cost center and account listing. A significant digit number system is employed. The numbering system allows the observer to know what type of account it is just from the number: asset, liability, cost center, and so on. With cost center accounts, the first set of digits is used to identify the department. In the example shown, "601" refers to Nursing Unit 4 West. The second set of digits indicates the type of expense with the 100 series used for salary costs, the 200 series for fringe benefits, and the 300, 400, 500, 600, 700, and 800 series used for supplies and services. The 900 series is usually reserved for expense recovery, the recoupment of expenses incurred on behalf of another department.

When costs are accounted for at the cost center level, they are generally put in one of three broad categories. Direct costs are those that a department incurs itself for its own use. Salaries and supplies are prime examples. Overhead or indirect costs are those incurred directly by one department

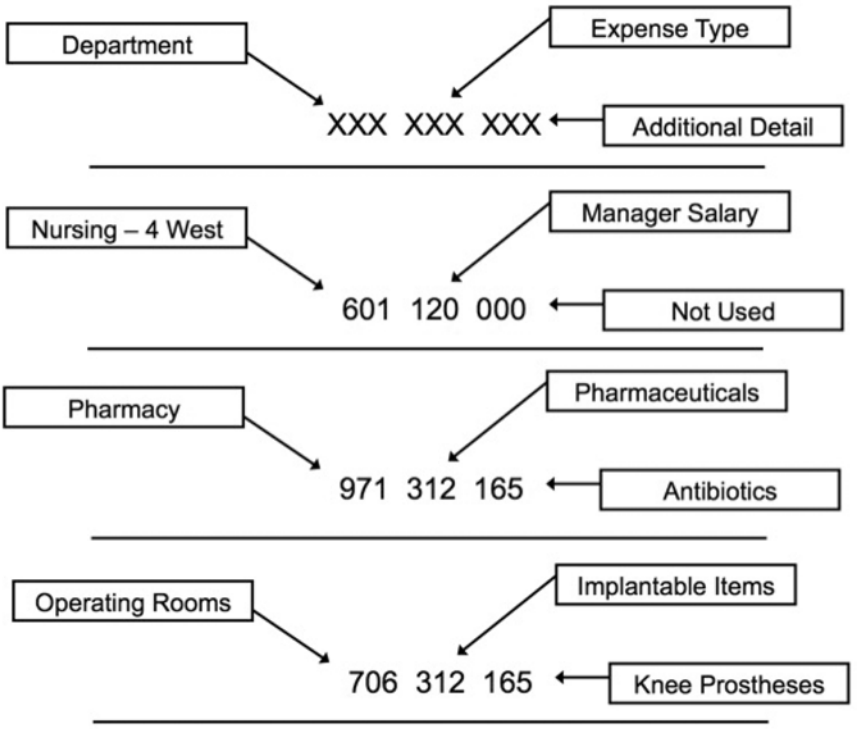

Figure 3.4

All accounts have a title or account name and an account number and follow a significant digit numbering system.

and then allocated to another department. The cost of the maintenance department, for example, is direct cost for the maintenance department, but overhead or indirect cost when allocated to another department like the ICU. Finally, financing and other costs include interest expense, depreciation, depletion and amortization expenses, and research and development costs. These, too, are eventually allocated to other departments.

OVERHEAD COST ALLOCATION

Cost allocation is a technique used to determine the "fully loaded" cost (both the direct and indirect costs) of a service, product line, department, or procedure. The costs of overhead cost centers are allocated to patient care cost centers using one of several different methodologies, all of which are

Table 3.9
Partial List of Statistics Used to Allocate Overhead Costs

Overhead Department	Statistic Used to Allocate Cost
Executive Offices	Direct cost of departments receiving the allocation
Accounting and Finance	Direct cost of departments receiving the allocation
Billing Office	Direct revenue of departments receiving the allocation
Admitting Office	Admissions
Social Services	Cases opened
Environmental Services	Square footage
Nutrition Service	Meals served
Maintenance	Square footage

designed to allocate 100% of the overhead. These methodologies range in simplicity from the single step down methodology (so called because the allocation worksheet resembles a set of steps) to the extremely complex multiple, simultaneous equation methodology. Once the fully loaded cost is known, prices can be set such that all of the organization's costs can be recovered.

To allocate overhead to patient care centers, a series of statistical indicators must first be developed for use in allocating the costs. For example, as seen in Table 3.9, the cost of the admitting office is spread among all the inpatient cost centers on the basis of the number of admissions each has handled. The cost of the accounting department is allocated based on the direct cost of the individual departments. Then, using these and other such values, the costs are allocated from one department to all the others, then from another department to all the remaining departments, and so on until all of the overhead has been allocated.

Once these amounts have been determined, a table of allocation statistics, Table 3.10, can be developed. This will form the basis for spreading the overhead dollars among the overhead receiving departments. The cost of the Admitting Office will be spread only to the inpatient units because only those units admit patients. And because 2 North accounts for 22.1% of the admissions (2,100/9,500), it will receive 22.1% of the cost allocated from the Admitting Office.

Once the allocation statistics have been assembled, the dollars of overhead cost can be allocated, as seen in Table 3.11, in the same proportions as the statistics. In allocating the cost of the executive offices,

Table 3.10
Cost Allocation Step Down Statistics

Department Name	Direct Cost ($000s)	Direct Revenue ($000s)	Cases	Admits	Square Footage
Executive Offices	$750				
Accounting	1,600				
Billing & Collections	1,500				
Social Services	1,850				
Admitting Office	1,500				
Environ. Serv.	1,800				
Maintenance	5,000				
Nursing 2 North	9,800	$21,600	2,100	2,100	13,800
Nursing 2 South	9,700	21,400	2,070	2,070	14,000
Nursing 3 North	10,100	22,200	2,270	2,270	13,800
Nursing 3 South	10,300	22,700	2,150	2,150	14,000
Intensive Care	16,000	34,100	1,800	910	15,000
Imaging Center	12,500	27,500			21,000
Clinical Labs	9,500	20,900			11,000
Operating Rooms	10,100	32,000			15,600
Emergency Room	8,000	17,600	9,000		17,000
Total	$110,000	$220,000	19,390	9,500	130,200

$750,000 must be spread to all the other departments. Those other departments have total direct costs of $109,250,000 (110,000,000 – $750,000). Since the Accounting Department represents 1.5% of the total direct expense (again, all departments except the Executive Offices), it receives $10,894 (1.5% of $750,000). This same calculation is carried down the column until all of the $750,000 is allocated. At the bottom of the column, the total is $0 since the sum of the amount of cost removed from the Executive Office line and the amounts added to the other cost centers is zero.

Each of the other overhead departments follows in turn, each absorbing overhead from other overhead departments and then allocating the combination of their own direct cost and the overhead allocated to them. Thus, the Social Services department allocated a combination of its direct cost

Table 3.11
Step Down Allocation of Overhead Costs

Department Name	Direct Cost	Executive Offices	Accounting	Billing and Collections	Social Services	Admitting Office	Environ. Services	Maintenance	Total Cost
Executive Offices	$750,000	(750,000)							–
Accounting	1,600,000	10,984	(1,610,984)						–
Billing	1,500,000	10,297	22,448	(1,532,745)					–
Social Services	1,850,000	12,700	27,685		(1,890,386)				–
Admitting	1,500,000	10,297	22,448			(1,532,745)			–
Environ. Serv	1,800,000	12,357	26,937				(1,839,294)		–
Maintenance	5,000,000	34,325	74,825					(5,109,150)	–
Nursing 2 North	9,800,000	67,277	146,657	150,488	204,735	338,817	187,739	521,496	$11,417,209
Nursing 2 South	9,700,000	66,590	145,161	149,094	201,810	333,977	190,459	529,054	11,316,146
Nursing 3 North	10,100,000	69,336	151,147	154,668	221,309	366,245	187,739	521,496	11,771,940
Nursing 3 South	10,300,000	70,709	154,140	158,151	209,610	346,884	190,459	529,054	11,959,008
Intensive Care	16,000,000	109,840	239,440	237,575	175,487	146,821	204,064	566,844	17,680,071
Imaging Center	12,500,000	85,812	187,063	191,593	–	–	285,689	793,581	14,043,738
Clinical Labs	9,500,000	65,217	142,168	145,611	–	–	149,647	415,685	10,418,328
ORs	10,100,000	69,336	151,147	222,945	–	–	212,226	589,517	11,345,171
ER	8,000,000	54,920	119,720	122,620	877,435	–	231,272	642,423	10,048,390
Total	$110,000,000	0	0	0	0	0	0	0	$110,000,000

($1,850,000) and $40,896 of overhead allocated to it ($12,700 from the Executive Offices and $27,685 from the Accounting Department).

Finally, when all the overhead costs have been assigned to the direct patient care cost centers, the total cost remains at $110,000,000. At this point, it is possible to develop a price list for the departments and their services that are billable in such a way that the entire $110,000,000 is recovered.

THE FALLACY OF COST ALLOCATION

Fully loaded cost is often incorrectly used to determine the soundness of a potential business venture. By knowing the fully loaded cost of a service or product, it can be compared to the potential revenue to determine if a profit or loss would result from pursuing the venture. This method is inappropriate for decision making and can lead to poor decisions.

Further, despite the growth in sophistication of the allocation methodologies, one thing has not changed. No matter how much or how little overhead is allocated to a given department, the manager of that department will feel he or she is charged too much. And, truth be told, that manager is probably right. The question that must be asked is this: Is appropriate or sufficient value received for the overhead assigned? In the manufacturing sector, overhead is referred to as "burden" because it represents the burden each department must struggle to carry. In health care, that burden is enormous, easily overshadowing the direct cost of the patient care centers. In addition, and far more troubling, overhead obscures the real cost situation. Much as the icing obscures the kind of cake it covers, overhead makes it difficult, if not impossible, to fully understand performance. Consider the following scenario.

Department A is one of three patient care departments in a health service organization. Each department is allocated an equal amount of the organization's $1.2 million overhead. Performance is measured using fully loaded cost per unit of service. The three departments are shown in Table 3.12.

Concerns have been raised that Department C's volume has dwindled significantly over the years and its cost has risen to the point of not being competitive. The decision is made to close Department C. At the same time, however, the manager in Department A has identified a way to improve her direct cost by $50,000. Logic tells us that Department A's manager has done well. But, as shown in Table 3.13, after the overhead has been reallocated in the wake of Department C's closure, things don't look quite so rosy for the department manager.

It now appears that both managers lost control of their costs. Despite a cost saving of $50,000, Department A's cost per unit of service rose by $15 and Department B's cost per unit of service rose by 20%!

Table 3.12
Selected Departmental Performance Statistics

	Department A	Department B	Department C
Direct cost	$500,000	$600,000	$300,000
Allocated overhead	400,000	400,000	400,000
Total cost	$900,000	$1,000,000	$700,000
Units of service	10,000	10,000	700
Cost per unit of service	$90	$100	$1,000

Table 3.13
Selected Departmental Performance Statistics

	Department A	Department B	Department C
Direct cost	$450,000	$600,000	
Allocated overhead	600,000	600,000	
Total cost	$1,050,000	$1,200,000	
Units of service	10,000	10,000	
Cost per unit of service	$105	$120	

The use of allocated overhead in this scenario clearly confuses the situation and makes judgment about performance more difficult. And while the earlier scenario is merely for illustrative purposes, the following real-world example demonstrates the danger in using fully loaded cost to assess performance. The facts remain unchanged, but the manager's name and location have been fictionalized.

The manager of the surgical ICU at a 300-bed hospital in the northwest had worked diligently to implement a number of best practice initiatives aimed at improving clinical quality, patient safety, and operating performance. She had worked collaboratively with her staff and the physicians to implement the "vent bundle," improve glycemic controls, and reduce sepsis. The results were startling. Clinical outcomes soared, average length of stay declined sharply, and direct cost per case improved by an astounding 36%. The celebration was short lived, however. Finance reviewed the ICU's performance using "fully loaded" cost (the direct cost of the unit and allocated overhead). In its methodology, overhead was allocated based on the number of admissions. Since the ICU had become far more efficient in moving patients through the unit, its admissions had risen and it had been allocated far more overhead. Enough overhead, in fact, that Finance

demanded to know why "fully loaded cost" had risen by 8%! Following several months of heated exchanges with Finance, the nurse manager resigned in frustration—doing the right thing had cost her the position and deprived the hospital of good managerial talent.

The nurse manager's outstanding performance in this case had been masked by the allocation of overhead. But worse, what sort of message is sent? Doing the right thing draws fire from Finance. Too often, overhead allocation and the use of fully loaded cost lead decision makers astray. The most accurate way to make decisions about the cost of a service is to look only at the direct cost involved and leave the overhead out of the discussion. After all, overhead is, essentially, a fixed cost. So, if the overhead assigned to one department rises, it must fall in other departments. The net effect is zero, another reason to avoid using overhead in the first place.

IMPORTANT CAVEATS

In using cost data, whether for comparison purposes, for decision making, or for judging performance, several important caveats cannot be overlooked.

First, choose the right data for the right job. Average cost data are fine for comparison purposes. It can be used to judge performance relative to other organizations, to compare one department to another within the same organization, or to gain competitive advantage. Average cost data, however, should never be used for decision making. That is the realm of marginal cost data. Remember, averages are about existing business while decisions are about new, incremental future business, which will have a different cost profile. Marginal cost data should be used for making decisions. This data is related specifically to the new, incremental business, which will not be burdened by the current cost profile.

Second, never use fully loaded cost in making decisions. The addition of allocated overhead to the calculation merely clouds the cost issue and leads to bad decision making. Instead, use direct cost only—the marginal or incremental costs (the changes in cost) that are associated with the decision itself. The logic is that any costs allocated to the idea being considered must be unallocated from the rest of the enterprise. This results in a "wash"—that is to say, no change in the total overhead. The increase in one area is balanced by a decrease in the others.

Third, never use cost allocation to determine what anything costs. Because overhead centers are often quite removed from the location of

patient care, their input to the cost of providing a service or performing a procedure is questionable at best. Instead, use the direct, and knowable, cost of the service or procedure. Rely on the most accurate cost data and do not muddy the waters with an allocation of overhead cost.

Finally, when judging managerial performance, only use direct cost. Department managers cannot control overhead spending, nor can they control the amount of overhead allocated to their departments. Judging their performance based on costs that they cannot control is unfair at best. Rather, understand what they can control and judge them accordingly.

Chapter 4

REVENUE AND REIMBURSEMENT

Every industry has payment or reimbursement methodologies that are fairly unique to the industry. Baseball teams don't sell season or single-game tickets the same way airlines sell seats. Auto dealers don't price their cars the same way movie theaters price their tickets for the latest blockbuster. The same is true of health care. Regardless of the industry, understanding how prices are set and how buyers pay for services is essential to success.

HEALTH CARE REIMBURSEMENT METHODOLOGIES

Several methodologies are used to pay health care providers for their services. These range from the classic fee-for-service approach in which the payer buys services on a piecemeal basis to the global budget methodology used in countries like Canada and Taiwan in which the national government pays a flat amount regardless of the number of patients served or the services provided. All of the methodologies have their advantages and disadvantages, and each provides strong incentives that influence provider behaviors.

Fee-for-service reimbursement is one of the oldest forms of payment for hospitals, doctors, long-term care facilities, and so on. The provider is paid for each individual service. The more services provided, the more the provider receives from the payer. A patient in the hospital for nine days (at, for example, $1,000 per day) would be billed $9,000. If that length of stay were to be reduced to only five days, the bill would drop to $5,000. The clear incentive for providers with fee-for-service reimbursement is to perform more procedures, test more, keep patients in hospital longer, and in other ways provide more services. In hospitals, fee for service is usually associated with longer length of stays than under a case-based methodology. Physicians paid via fee-for-service arrangements are thought to run

more tests and provide added, though potentially unnecessary, services in order to increase payments. For this reason, case-based and global payment methodologies were introduced in the hope that they would drive down the cost of health care.

Cost reimbursement took off as a methodology with the arrival of Medicare and Medicaid in the 1960s. Regardless of what they charged for services, hospitals were reimbursed for the cost per inpatient day. The amount calculated was based on a cost allocation (see Chapter 3), which sought to identify the total cost per inpatient day by allocating the cost of overhead departments (accounting, maintenance, etc.) to the direct care centers (general medical/surgical nursing units, intensive care unit, operating rooms, etc.). Though cost, not charges, was used for reimbursement, this approach was, essentially, a fee-for-service approach and did nothing to reduce the cost of health care. In fact, it worked to increase the cost of care as hospitals learned that the more they spent, the more they were paid.

In the *charge-based reimbursement* approach, providers developed a price list (charges for the various services) based on their determination of the underlying cost for their servicers. These charges formed the basis of the bill. Some payers, based on prior negotiations with the provider, pay a discounted amount of these charges. Often, the charges for services are far greater than the amounts paid under a case-based methodology. Self-pay patients, those without insurance, would be expected to pay the full amount of the charges.

The *case-based reimbursement* approach makes a single payment for an entire case, regardless of the amount of services provided or the length of hospitalization. It accounts for about 60% of all payments for inpatient services to hospitals in the United States. Essentially, hospitals are paid a set amount based on the patient's diagnosis. The methodology is designed to drive down cost by incentivizing the hospital to eliminate needless services, reduce length of stay, and eliminate complications that drive up the cost of care. Unfortunately, this methodology can place hospitals and physicians at odds. The hospital benefits from shorter length of stay, but the physician does not.

As shown in Table 4.1, three different hospital cases with the same exact diagnosis generate three different sets of charges. A large part of the difference is in the room and board charges associated with a longer length of stay. While a fee-for-service payer may reimburse based on these charges, thus paying substantially more to Hospital C than to Hospital A, those payers using the case-based approach are not bound by the different charges and pay a flat amount regardless of length of stay or other charges.

Table 4.1
Comparing Fee-for-Service and Case-Based Payments

	Hospital A	Hospital B	Hospital C
Room and board	$14,500	$16,000	$17,500
Laboratory	2,500	2,600	2,700
Diagnostic imaging	1,400	1,500	1,600
Medications	3,800	4,000	4,200
Other charges	2,800	2,900	3,000
Total charges	$25,000	$27,000	$29,000
Fee-for-service payment	$25,000	$27,000	$29,000
Case-based payment	$26,000	$26,000	$26,000

In this illustration, the case-based payer will pay only $26,000. Hospital A will benefit from this, while the other two hospitals will not. They are, thus, incentivized to reduce length of stay and "unnecessary" services.

Under a *capitation scheme*, providers receive a specified amount per member per month regardless of the amount or cost of the services provided. Capitation pays a provider, typically a physician or physician practice, a set monthly amount for each patient (member) assigned to them regardless of the amount of services provided. The payment is referred to as the PMPM (per member per month) amount. In theory, providers will carefully manage resources to provide the most efficient and effective care for those covered by the PMPM. Spend less than the PMPM and they keep the difference. Spend too much and they lose. A payer uses this approach as a way of incentivizing providers to reduce "unnecessary" services and stress more cost-effective preventive care. The payment rises and falls only in response to the number of beneficiaries enrolled.

The *global budget methodology* is similar. Providers receive an annual amount set before the fiscal year. Global budgets are used in Canada, Taiwan, and a number of other countries as a means of controlling total national health expenditures. The global payment caps them at a set amount. When the money runs out, services are no longer provided. A hospital in Ontario, Canada, for example, would receive an annual payment amount or budget. The payment amount is the same whether it cares for more patients or fewer.

The *pay-for-performance* (P4P) approach pays providers based on the quality of care provided. This is more of a philosophical approach than a methodology in that it is used to modify case-based payments. Case

payments are adjusted based on certain indicators of quality. These include process indicators like the use of aspirin for chest pain patients, outcome measures like readmission rates, and cost. Though not without its problems and flaws, P4P incentivizes providers to improve outcomes not just in absolute terms but also in relative terms—compared to other providers. That can present a problem for high performers whose rate of improvement compared to other, lesser performers may not be as dramatic.

Consider this scenario involving a high-performing hospital (Hospital A) in which, for example, 99% of patients presenting at the ED with a complaint of chest pain are administered an aspirin within 30 minutes of arrival. Other hospitals, Hospital B through Hospital J, administer aspirin in only 50% of such cases. Now consider that all the hospitals decide to improve their clinical performance with respect to this process measure and all of them achieve a 100% compliance rate. Which of the hospitals will appear to be more improved? Hospitals B through J will show a 200% increase, while Hospital A—the best practices hospital—will show only a paltry 1% increase! Hospital A will be penalized in the reimbursement because it did not improve as much as the others.

Despite the flaws, pay-for-performance reimbursement is an appropriate and long overdue approach. In no other industry can mistakes be made and consumers be forced to pay for them. If a car is taken to the mechanic because the brakes are squealing and the brakes still squeal after the mechanic works on them, will the customer pay for the repairs? Probably not. The customer will expect the squealing to stop before paying for the repairs. The difference between the mechanic and health care is that in health care, payments have historically been made for effort, whereas in all other endeavors the payments are for results.

The *bundled payment approach* provides a single payment for all of the providers and services associated with a single episode of care. For example, rather than individual payments to a general practitioner, orthopedic surgeon, anesthesiologist, physical therapist, radiologist, hospital, imaging center, and so on for the repair of a torn rotator cuff, a single payment is made and shared among the various providers. The intent is to lower the total cost of the repair by forcing the providers to coordinate care better and eliminate redundancy and needless interventions.

More recently, *population-based reimbursement* has entered the scene. This approach is designed to drive providers, mainly hospitals, to focus on population wellness.

Is there a single best way to pay for health care services? Is reimbursement the best way to modify provider behaviors? Table 4.2 highlights the

Table 4.2
Incentivized Provider Behaviors under Various Reimbursement Schemes

	Methodology/Approach							
Incentivized Behaviors	**Fee for Service**	**Cost Reimbursement**	**Charge Based**	**Case Based**	**Capitation**	**Global Budget**	**Pay for Performance**	**Population Based Revenue**
Minimize length of stay				X	X	X	X	X
Provide most efficient, least costly services				X	X	X		X
Optimize coding to maximize DRG				X				
Improve documentation to maximize DRG				X				
Admit unnecessary cases	X	X	X	X				
Perform unnecessary tests/procedures	X	X	X					
Maximize length of stay	X	X	X					
Increase cost		X						
Decrease operating efficiency	X	X	X					
Negotiate highest possible rates	X		X	X	X			
Increase charges	X		X					
Minimize admissions/services				X	X	X		X
Utilize least expensive setting for care				X	X	X		X
Emphasize preventive services					X	X		X
Comply with “best practices” medicine				X	X	X	X	X
Optimize clinical and operational efficiency				X	X	X	X	X
Reduce/eliminate mistakes and errors				X	X	X	X	X
Improve compared to other providers							X	X

various provider behaviors that have been incentivized by the different reimbursement methodologies. Note that none of them are aimed at the ultimate consumer, the patient. One thing is clear, without the participation of the patient in the financial impact of his or her health decision making, all the reimbursement schemes in the world will not slow the rapidly rising cost of health care. The reimbursement approaches at this point focus only on the supply side of the equation. Unless the demand side is dealt with using similar financial incentives, health care costs will continue to rise in spite of the efforts of the government, consumer groups, insurance companies, and employers.

SETTING PRICES

Two approaches can be used to determine the price for a service. Prices can be based on market conditions—the push and pull of supply and demand, competition, and so on—or on financial requirements—the amount of cost, interest on debt, and so on that must be covered. Setting prices, however, should not be confused with reimbursement. It is possible, for example, for a physical therapist to set a price of $175 for a session but be reimbursed only $35 by the payer. This discrepancy in price versus payment must be considered when prices are determined.

As depicted in Figure 4.1, equilibrium between supply and demand is achieved when they balance each other. The term "price elasticity" refers to the ability of price to balance supply and demand. It measures the responsiveness of supply or demand for desirable products or services to changes in price. As price rises, demand decreases and supply increases. As price falls, demand rises and supply decreases.

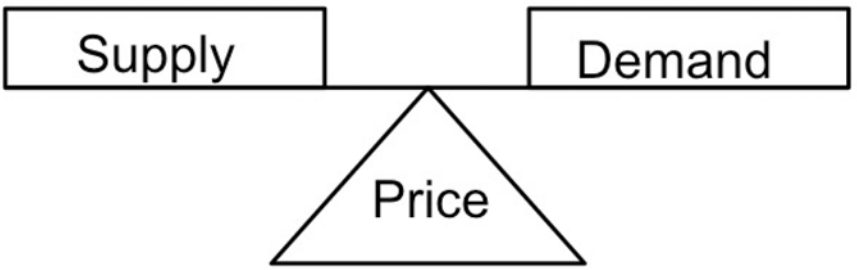

Figure 4.1
Price is a powerful force in modifying demand.

Whether based on market conditions or financial requirements, price has an impact on both supply and demand. If supply is greater than demand, a reduction in price can boost demand or reduce supply to the point that equilibrium is reset. The same is true in the other direction. If demand is too high, an increase in price will either reduce demand or incentivize others to supply goods and services until equilibrium is once again achieved.

Setting prices based on market conditions requires a fair amount of knowledge of the marketplace: the number and types of providers, the level and quality of services, the locations of providers and potential customers, the need and demand for the service (which may very well be different from each other), the level of competitiveness in the marketplace, and so on. After choosing a competitive price, one must make sure that price will cover all the financial requirements. These include the direct cost of the service along with other financial considerations like debt repayment; profit, which is a routine part of business even for nonprofits; and sufficient coverage for discounts, bad debts, and charity care. Finally, overhead or indirect costs are covered. But, as depicted in Figure 4.2, the money works its way down from the price to the overhead. In this depiction of the market-based approach, the amount of overhead is a function

Figure 4.2
Price setting based on the marketplace.

of affordability. After the revenue is reduced by the direct cost of the product or service, including discounts and other write-offs, profits, and other financial considerations, whatever is left is available to support overhead. While this approach is not designed to be an overhead limiting approach, it actually serves that very useful purpose. Care must be exercised in setting the price. If it is set too high, demand may not materialize; if it is set too low, insufficient funds may be provided for operating the business.

As seen in Table 4.3, the combination of a market-based price and anticipated volume of business yields total revenue—the amount that must cover all the financial needs of the organization. But the total revenue must be reduced by the amount of discounts, bad debts, and charity care that will be provided as part of normal business operations. In this example, 7% of billed charges are given over to discounts to payers, bad debts of patients who have refused to pay their bills, and charity care for patients who cannot afford their care, leaving $3 million available to cover everything else, including a modest profit.

Note that in the example, the first call on the $3 million is the profit target of $500,000 followed in order by $500,000 of other financial considerations and then the $1.5 million of direct costs. At this point, only about $500,000 is available to cover overhead, thus limiting the amount of overhead.

Alternatively, price can be set based on the cost of providing a service. The various costs and financial requirements are combined and then divided by the expected volume of service to determine a price. As seen in Figure 4.3, the direct cost of the service is the starting point. Then indirect

Table 4.3
Market-Based Price

Price		$134.41
Anticipated volume of business		24,000
Gross revenue		$3,225,840
Write-offs and discounts (7% of $3,225,840)		225,809
Net revenue		$3,000,031
Profit target	$500,000	
Other financial considerations	500,000	1,000,000
Available to cover expenses		$2,000,031
Direct costs		1,500,000
Available for overhead		$500,031

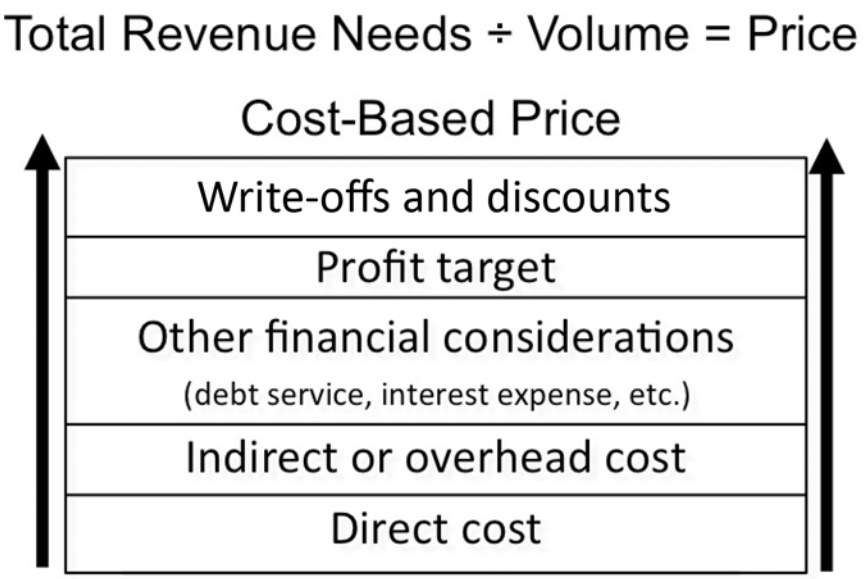

Figure 4.3
Price setting based on cost.

costs, financial considerations like debt service and profit, are added in. Finally, those costs are marked up to cover discounts and write-offs. The final total is divided by anticipated volume to arrive at a price for the service.

While this approach has the benefit of covering all costs and other financial needs, the possibility exists that the price will be set too high and demand will not materialize. The calculations needed to determine a cost-based price are shown in Table 4.4.

As seen in the table, the direct and indirect or overhead costs are the first items taken into account. Next come the other financial considerations (e.g., debt service) and profit. Once this amount is determined, it can be "grossed up" to take into account the 7% of billed charges that are not collected. This is done by dividing the net revenue needs ($3,000,000) by the collection rate of 93%. The result is the amount of gross revenue that needs to be generated by the combination of price and volume. Note that this is calculated by dividing the net revenue amount by the collection rate in order to determine the larger amount of gross revenue. If one were to merely add 7% to the net revenue needed (Table 4.5), an insufficient amount of gross revenue need would be calculated, leaving the organization short of its needs. This is because the 7% that is not collected (and the 93% that is) applies to the gross revenue amount, not the net revenue amount.

Table 4.4
Calculating a Cost-Based Price

Direct cost of the service	$1,500,000
Overhead or indirect costs	500,000
Total operating costs	$2,000,000
Other financial considerations	500,000
Profit target	500,000
Net revenue needs	$3,000,000
Collection rate	93%
Gross revenue needs	$3,225,806
Anticipated volume of business	24,000
Price	$134.41

Table 4.5
Calculating Gross Revenue Needs Based on the Collection Rate

	Using Multiplication	Using Division
Net revenue	$3,000,000	$3,000,000
Collection rate		93%
Gross revenue		
Write-off percentage	7%	
Write-offs mount	$210,000	
Gross revenue	$3,210,000	$3,225,806
Collection rate	93%	93%
Net revenue	$2,985,300	$3,000,000

The difference in gross revenue as seen at the bottom of the table is about $15,000, a simple mistake to make and one that seems perfectly logical. If the organization doesn't collect 7% of its bills, just add 7% to the bills to begin with. But, as demonstrated in the table, adding 7% doesn't work. One must "gross up" by dividing by the amount collected—in this example, 93%.

Moving from the simple, a single price for a single service, the concept remains the same, but the complexity of the calculations increases. Consider, for example, the hospital that provides inpatient services (on a number of nursing units) along with several ancillary services (imaging, OR, labs) and wished to price its services. As described in the discussion of overhead cost allocation in Chapter 3, it will allocate all costs to the direct patient service centers (2 North, Imaging, etc.). Then, as seen in Table 4.6, a profit target (column B) will be applied to each center to determine the

Table 4.6
Determining Price for Services

Department	Total Cost[a] ($000s) A	Profit Target ($000s) B	Target Net Revenue ($000s) C	Collection Rate D	Required Gross Revenue ($000s) E	Service Volume F	Price ($) G
2 North	$1,209.9	$279.2	$1,570.1	80%	$1,962.6	3,200	$613.32
2 South	1,267.2	274.1	1,541.3	80%	1,926.6	3,400	566.65
3 East	1,310.7	283.5	1,594.3	80%	1,992.8	3,000	664.27
3 West	1,275.1	275.8	1,550.9	80%	1,938.6	3,600	538.50
ICU	556.6	120.4	677.0	80%	846.3	450	1,880.57
Imaging	1,312.3	283.9	1,596.1	80%	1,995.2	45,000	44.34
OR	1,272.2	275.4	1,548.6	80%	1,935.8	120,000	16.13
Labs	960.0	207.7	1,167.7	80%	1,459.6	1,600,000	0.91
Total	$9,164.0	$2,000.0	$11,246.0		$14,057.5		

[a]Total cost equals direct cost plus allocated overhead.

targeted net revenue (column C). The net revenue amount is then grossed up to determine the required amount of gross revenue to be generated by each service. This is done by dividing the amount in column C by the collection rate in column D. Once this amount (column E) is determined, it is divided by the anticipated units of volume (column F) that each of the centers will handle to arrive at a price (column G) for each service.

The price for a patient day on the 2 North nursing unit is $613.32: $1,962,600 spread across 3,200 patient days. The same approach is used for all the centers. The only difference is the units of volume. For the inpatient units, patient days are used. In imaging, relative value units are used. In the OR, it's minutes and for the labs, the number of tests.

BILLING AND COLLECTING

Once prices have been set and bills rendered for services provided, the focus turns to collecting the bills. This involves a complex cycle of activities involving various departments within the provider organization as well as an insurance company, Medicare, Medicaid, or other party responsible for paying the bill. The billing and collecting cycle, as illustrated in Figure 4.4, begins with the services themselves. The number of days

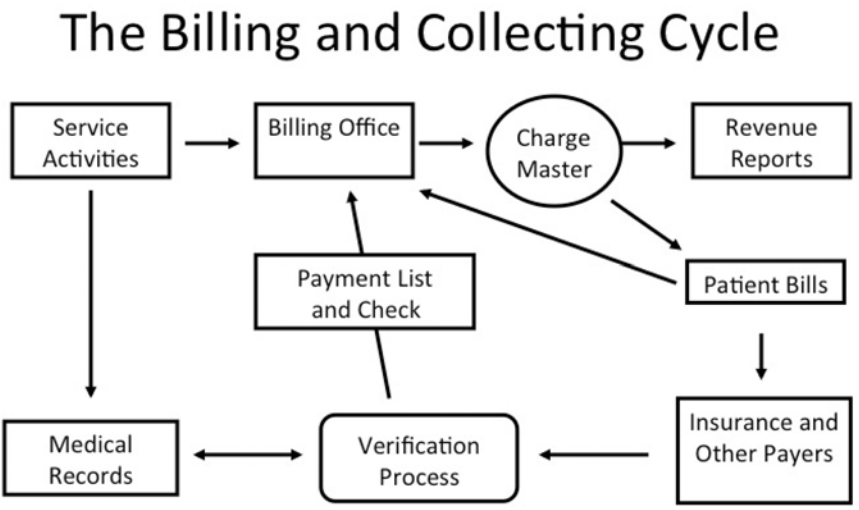

Figure 4.4
The billing and collecting cycle. Factors that influence collections include proper documentation, appropriateness of services, payer preauthorization, length of time between billing and collecting activities, and coverage limits.

the patient spends in the hospital, for example, is recorded in the census system. Similarly, the use of ancillary services like lab tests, CT scans, transfusions, and medications are also tracked in various systems in the pharmacy, the labs, and so on.

The information about the various services and the patients involved is sent to the billing office where it is compiled and matched against a charge master, which contains the prices for all the services. Next, the priced-out data are entered into the revenue system which reports revenue by department, location, type of service, and so on and onto the patient bills. The revenue reports are distributed to departments as part of the performance reposting routine at the end of the month. The bills are batched and transmitted to the various payers. Copies are kept in the billing office.

Upon receipt of the bills, the payer begins its processing routine, which involves verification of the patient information, determination of coverage and its limits, compliance with any applicable preauthorization requirements, and so on. This verification process also includes examination of underlying medical records information to determine the exact cause of the encounter and the appropriateness of the treatments involved. Once it has been verified to be a legitimate claim, it is processed for payment and the provider receives a check.

As noted previously, there can be a large difference between the amount billed and the payment received. This is because all third-party payers are entitled, either by law or by contract, to significant discounts off the charges on the bill. Consider the following scenario.

An 80-year-old grandmother who lives alone in the independent living section of a retirement community falls while trying to get into bed, hits her head, and becomes disoriented. Paramedics take her to a nearby hospital where she is treated in the emergency department. The injuries suffered in the fall are relatively minor, consisting mainly of a nasty bump on the head. But doctors want to know what caused her to lose her balance and fall in the first place. A transient ischemic attack? An inner ear infection causing dizziness? Something else? They probe and test. The final bill is just over $22,000. But grandma is a Medicare patient and the payment to the hospital is only $9,900.

The scenario illustrates the difference between coverage and payment. The charges are fully “covered” by Medicare, meaning the patient has nothing to pay. But the payment is significantly less than the bill. This concept applies to all third-party payers. If an item is covered, it merely means the payer will reimburse for it. It does not mean it will pay the

face value of the bill. If an item is not covered, the patient is left to pay it personally. And this is where the charges on the bill apply. Had grandma's hospital encounter not been covered, she would have been responsible for paying the full $22,000.

As complicated as the billing process is, the real challenge for providers is collecting the money owed. Dealing with third-party payers brings issues of coverage limits, payment delays, challenges relative to appropriateness, contractual limits on payments, and so on, but dealing directly with patients, whether for the entire bill or the patient responsibility portion, is far more difficult. These bills result in bad debt and charity write-offs.

A bad debt is defined as the amount that the patient could pay but chooses not to pay. Hospitals and other providers work hard to minimize this kind of write-off, often working out time-payment arrangements or compromise deals (giving a discount in exchange for agreeing to pay the residue) in order to get the bills paid. Almost every encounter a patient has with a health care provider entails a patient responsibility amount of some sort. Some are small, others quite large, depending on the patient's coverage. Collecting these amounts is essential to stable financial operations. The level of bad debts as a percentage of revenue continues to rise. Because hospital profit margins are so narrow to begin with, any upward movement in bad debt write-offs can be calamitous.

Charity care—the value of care provided to those who truly cannot afford to pay—has also been rising. This, too, burdens hospital bottom lines and has been the focus of legislative inquiry. Just how much charity care is sufficient? Some states have passed legislation mandating that a specific percentage of operating costs be allocated to free care for the indigent, while others have required tougher definitions of what constitutes medically indigent.

As displayed in Figure 4.5, the level of write-offs for charity and bad debts as a percentage of total charges has been rising steadily for over a decade.

Beginning with write-offs of 5.4% in 2002, the rate has climbed to 5.9% and is likely to continue rising.[1] Levels this high place significant strain on hospital resources. Hospitals, physicians, and other providers are forced to accept deep discounts from Medicare and Medicaid and may be unable to pursue other classes of paying patients. At what point will these providers be unable to continue providing care of any kind?

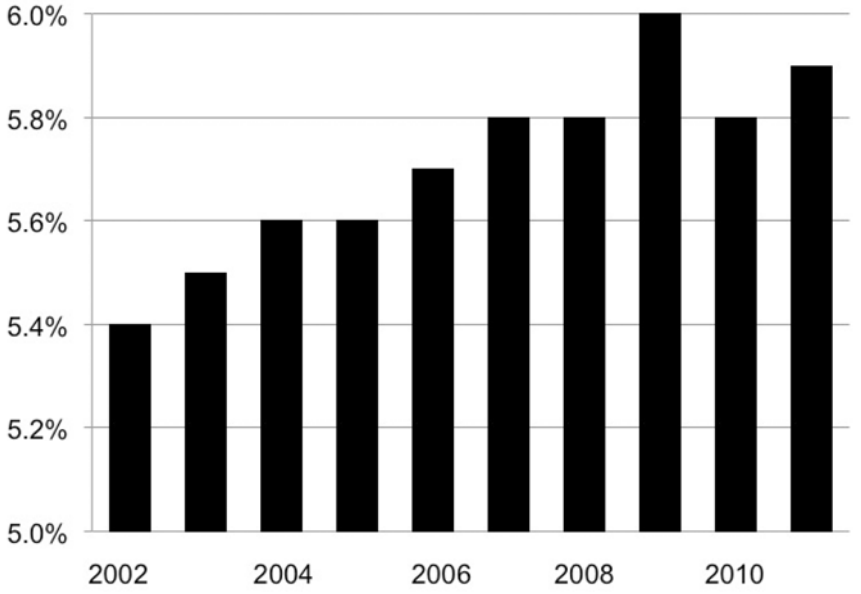

Figure 4.5
Write-offs for bad debts and charity care have been rising steadily. (Health Forum, AHA Annual Survey Data, 1980–2011)

SUMMARY

Successful managers and leaders in all fields understand the importance of revenue to the continued success of the business. In health care, the emphasis has often been placed on cost. But to be successful moving forward, health care providers will need to broaden their focus to take into account revenue, a significant part of which is price. They need to recognize that there is a limit to how much cost can be reduced. As competition increases, providers will need to stress value, which is located at the intersection of quality and price.

NOTE

1. Health Forum, AHA Annual Survey Data, 1980–2011.

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Chapter 5

INTRODUCTION TO BUDGETING

Budgeting is one of the most important tools in managing any enterprise, from sole practitioner physician practice to large academic medical center. It lays out the expectations and tone for management of the organization's resources. The budget should be looked at as an opportunity for deciding what will be accomplished in the coming year, for aligning resources with objectives, and to set about planning for an organization's achievements.

Often, however, individual managers face the budget preparation process with a sense of dread. To some degree, this has to do with the pressure to stretch scarce resources. But it also originates in the fact that many managers are simply uncomfortable with the idea of calculating a budget.

BUDGET DEFINITION

A budget is a detailed plan showing how resources will be acquired and used over a specific time period. It is a plan for the future expressed in formal, measurable terms.

A DETAILED PLAN

The detail contained in a budget is both a curse and a blessing. It is a curse because accumulating the detail requires a sizeable amount of work. For some managers this represents a major effort beyond their usual heavy daily workload. But the effort is well worth it. The detail in a budget provides managers with a full picture of all the volume, revenues, staffing, supplies, and so on—all the resources at their disposal in order to achieve their financial objectives. The more detail, the better. Just as a digital camera with 10 megapixels provides a clearer and crisper picture

than a 1-megapixel camera, a budget with significant detail makes managing the resources easier. For example, in the pharmacy, it is possible to prepare a budget with a single budget line for pharmaceuticals. But is that budget helpful as the director attempts to manage the pharmacy? The following scenario illustrates the power of budget detail to help with management.

The director of the pharmacy has been allotted $12,000,000 to cover pharmaceuticals during the year. Historically, spending in January is heavier than most other months, so $1,200,000 is allotted to January, the first month of the budget year. The budget and actual spending are accounted for in a single account, "pharmaceuticals." When the actual report arrives on the director's desk at the end of February, it indicates that actual spending was $1,440,000.

What caused the 20% deviation in spending? Will the pharmacy director know what drove him to spend the added $240,000? Probably not; the pharmacy budget lacks the detail needed to identify which drugs or class of drugs was involved in the overspending. Had the director allotted the budget not just to the individual months but as well to classes of drugs (antineoplastics, antibiotics, etc.) or even to specific lines for each or most of the drugs in the formulary, sufficient information would have been available to indicate if the overage was associated with higher-than-expected use of certain drugs or classes of drugs.

While it may take added work to develop such a detailed list of drugs and expected amounts and then to allocate the budget accordingly, there is a clear payoff. The added detail makes it possible to analyze performance, determine causes of budget deviations, and improve management of scarce resources.

RESOURCES

Most managers list staff and supplies as the main resources to be dealt with in a budget, but there's far more to it than that. Resources also include a mix of tangible and intangible resources: patients, physicians, space, equipment, facilities, information, people (with the right attitudes, skills, and intellectual abilities), money (e.g., financial strength), and time (perhaps the most important resource of all).

Patients are certainly necessary to any provider organization; they are the essence of its mission. If an organization drives away patients (perhaps via poor customer service, poor clinical quality, lack of services, etc.), what will become of that organization? Will it thrive or will it wither and die? Paying attention to the needs and attitudes of patients

is essential to continued success and also to growth of the business. This means paying attention to where the patients are, their characteristics and demographics, population trends, disease demographics, competition, and so on. Any factor that will influence patient behavior is important to understand.

Equally important are physicians who direct patients to the hospital, imaging center, laboratory, and so on. Similar to patients, this resource must be understood fully in terms of convenience, location, specialty, practice growth, and other factors that will influence their behavior with respect to use of the health care organization. How easy is it to post a case on Hospital X's operating room schedule? How long does it take to schedule an MRI? How quickly are lab results available from a reference lab? Is rounding on patients easy or difficult? The answer to these and similar questions will determine how well the organization is perceived by physicians and how much utilization will result. Not to be forgotten, however, is the unique physician–patient relationship. Often, a patient's experience with a particular provider organization will influence physician decisions with respect to admission. Memorial Hospital may be the surgeon's choice for performing the surgical procedure. But if the patient has had a bad experience there, the surgeon, who likely has privileges at several hospitals, may decide to do the case elsewhere. This unique relationship must never be forgotten. For physician practices, linkages with other physicians are also important as they provide patients via referrals. Not many patients seek out specialists like neurosurgeons or oncologists directly. Rather, they make the connection via a referral from a primary care physician. Thus, the relationships between and among primary care and specialty physicians are crucial.

Facilities, space, and equipment resources are also important to the overall success of the organization and must be given due consideration during the budget process. Is enough of the right equipment available to achieve the stated objectives? Are the physical locations and adjacencies appropriate and supportive of efficient clinical and operational functioning? Are the facilities conveniently located? Is the space sufficient to accommodate patients, providers, and all of the associated, necessary support functions? Questions like these will help determine whether these resources are adequate.

Last, but certainly not least, of the tangible resources is money—the financial strength of the organization. Money, or access to it, allows organizations to invest in new programs, purchase equipment, acquire physician practices, pay workers, and buy supplies. Money is an essential

resource for achieving the organization's objectives. Without the financial wherewithal, organizations struggle to survive.

Intangible resources should also be considered. While these have no physical dimensions or weight, they are equally important and in some cases more important than the tangible ones. These include the skills and attitudes of staff, the intellectual "firepower" of those in management and leadership positions, business intelligence, and time.

Clearly, the skill level of workers, whether they are environmental techs, nurses, pharmacists, lab techs, and so on, is important. Beyond the skill level, however, worker attitude cannot be ignored. Both Jim Collins, of "good-to-great" fame, and Jack Welsh, the noted former CEO of General Electric, point out in their writings: getting the right people is essential to success. The right people have the right attitude. Given the right attitude, most people can be trained to do the necessary work. All the training in the world, however, cannot compensate for bad attitude.

The intellectual resource, smart people, should be considered one of the principal resources of any organization. People who can see opportunities when others cannot, who can find ways to succeed when others can't, who can achieve difficult goals, and who can think "outside the box" are invaluable and can set an organization head and shoulders above its peers and competitors.

Another intangible resource is business intelligence. Successful organizations gather timely and usable information that supports day-to-day decision making as well as long-term strategies. Some examples include knowing how reimbursement schemes will play out, understanding the impact of proposed regulations, recognizing the health needs of a patient population, and evaluating the financial strength and needs of a potential competitor.

Finally, several aspects of the time resource should be considered. First among these is timing—when to do things. Should the organization be the "first kid on the block" to offer a particular service? Being first can offer an opportunity to establish market presence, perhaps even market dominance before others offer the same service. It can also expose the organization to risk. Timing also means the orchestration of time and action steps. If a new cardiac surgery program is to open on July 1 of the new fiscal year, when should the nurses be recruited, June 1 or perhaps January 1 to allow for orientation and training? Another aspect is the amount of time—how long does it take to do something? Has sufficient time been provided in the budget to accomplish the organization's objectives? If six months is required to construct and equip a new cardiac cath lab, it makes no sense

to include nine months of volume and revenue in the operating budget. One thing is for sure: time is the only resource that cannot be recaptured once it is gone. A CT scanner can be replaced. Staff can be recruited to replace those who have left. But once time is gone, it can't be replaced; yesterday will not be back again. And actions that could or should have taken place yesterday are lost forever. Opportunities that should have been taken advantage of may never present themselves again.

ACQUIRING AND USING RESOURCES

A well-prepared budget will also deal with plans for acquiring needed resources, especially scarce ones such as staff in nursing, pharmacy, and other labor-sensitive departments. In the human resources department, the budget should plan for recruitment, training, and development. If the number of physicians practicing at a hospital is an area of concern, the budget should provide resources to recruit and retain them, support their office practices, and fund continuing education programs. These would be ways of establishing physician loyalty and addressing that concern.

A budget should describe how resources will be used or deployed by location, time of day, and throughout the fiscal year. Will all of the staff be used at the main location, or will some business be conducted at remote locations? Some hospitals operate stand-alone outpatient facilities in locations away from the main campus. Will all departments be operating 24 hours a day, 7 days a week? What is the work schedule, and are resources matched to this? Will some resources be needed only during the last three or four months of the year while others are needed for the entire year?

A SPECIFIC TIME PERIOD

A budget normally covers one year and is often referred to as an annual plan. Other time periods can and should be involved. Monthly budgets, a 12-month subset of the main budget, are used to populate management reports. A salary budget that is divided into pay periods provides better, more current information to assist in managing salary costs.

Some organizations prepare multi-year business plans or strategic plans that cover anywhere from three to five years. Each year, the multi-year plan can be modified and extended. And each year, too, as the annual plan is prepared, the multi-year plan can be referenced to make sure the annual activities are consistent with long-term goals.

Seasonalizing the budget (dividing it into the individual monthly and pay period amounts) requires a thoughtful approach. The "lazy man's" approach is to divide the budget amounts by 12 to determine the monthly amounts (or by 26 to determine the amount per pay period). But in the real world, do patients arrive evenly throughout the year? Are fewer elective cases done in surgery in December than in October? If this is expected to happen, the seasonalization of the budget should reflect it. Seasonalizing by simple division gives the impression that each reporting period is either better or worse than that budget when, in fact, the opposite may be the case. As can be seen in Figure 5.1, improper seasonalization can give the wrong impression about performance.

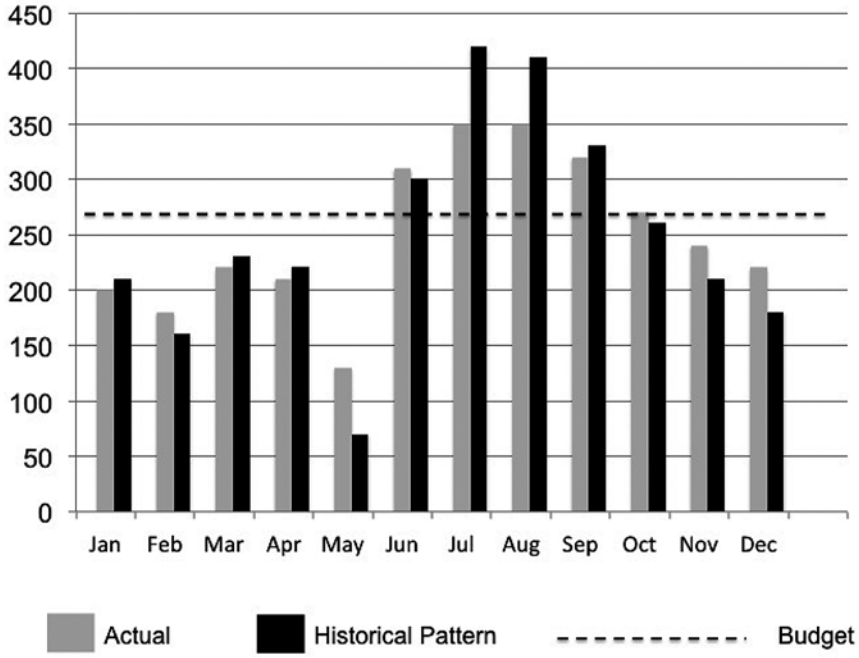

Figure 5.1
If a budget is seasonalized by dividing it into 12 equal monthly amounts, the result can look like this. Rather than follow the pattern of historical usage and, thus, provide a better monthly yardstick, the improperly seasonalized budget gives the impression that all months deviate, some significantly, from budget. The time saved by this lazy man's approach is more than lost during the year in determining why actual amounts deviate so much from the budget.

A PLAN FOR THE FUTURE

One thing that frightens many managers when it comes to budgeting is the notion that they are dealing with events as much as 18 months into the future. Consider, for example, that it takes about six months to prepare a budget and that the budget itself is 12 months long. That's 18 months from start of the process to end of the budget year. For many managers the question of what their department will be like in 18 months' time is an extremely difficult one to answer. Rather than try to project where the department will be in 18 months, better managers decide where they want it to be and then move to achieve that vision. As pointed out by the late management expert Peter Drucker, "The best way to predict the future is to create it."[1] Wise advice for leaders and managers as they approach the budget preparation work. Table 5.1 represents one version of a timetable for budgeting from the preparation stage to approval.

Table 5.1
Budget Timetable

Events	Timeline
CEO and leadership team establish overall goals and objectives to include volume targets, inflation rates, labor contract settlements (if unionized), salary increase parameters, profit target, dollar limits for equipment and facility improvements, etc.	17 weeks prior
Guidelines for operating and capital budgets issued to departments; includes schedule of due dates for various budgets.	16 weeks prior
Departments prepare operating and capital budgets, including new program and budget adjustment requests.	16 weeks to 12 weeks prior
Operating and capital budgets submitted to Budget Office and Capital Review Committee via appropriate administrative hierarchy.	12 weeks prior
Budget Office performs nonjudgmental technical review of submitted budgets and prepares for budget review meetings. Capital Review Committee performs similar review of equipment and improvements requests.	12 weeks prior
Budget meetings with departments to review their requests for operating and capital funds.	10 weeks to 6 weeks prior
Capital Review Committee makes determination of which requests to recommend for funding.	6 weeks prior

(*continued*)

Table 5.1 (*continued*)

Events	Timeline
Executive level of organization makes final determination of funding for operating and capital budgets, to include new programs and budget adjustments.	4 weeks prior
Budget Office prepares supportive analysis for presentation to governing body for final approval.	2 weeks prior
Presentation of budget to governing body for board approval.	Last board meeting prior to start of budget year

The governing board is ultimately responsible for the operation of the organization and delegates the necessary authority to management. The governing board retains approval authority for the operating and capital budgets. Management must obtain the board's approval prior to implementing the new budget.

Because the meeting schedule varies from one institution to another, the timeframes described herein are expressed in terms of weeks prior to the board meeting at which the budget will be presented for approval. The notation "- 12 weeks," for example, indicates that the associated tasks should take place 12 weeks prior to that board meeting.

FORMAL AND MEASURABLE TERMS

Finally, budgets are always expressed in formal and measurable ways. The budget must be approved by the board, hence a certain formality to the process ("all those in favor . . ."). Budgets that do not use measurable outcomes are useless for management purposes. For example, budgeting for "improved quality" does not provide a real target. How much improvement? To what level of quality? Budgets must contain measurable targets for all departments and components and for all categories within the budget: volume, revenues, full time equivalents (FTEs), salaries, fringe benefits, supplies, and so on. Lacking measurability, success is impossible. Drucker, leadership guru Tom Peters, and Britain's famous Admiral Horatio Nelson all spoke of measurement. To paraphrase all three, "if you can't measure it, you can't manage it."

TYPES OF BUDGETS

Organizations deal with three main budgets: the operating budget, the capital or equipment budget, and the cash flow budget. Additional budgets

may be in play for a new program implementation, a major facility project, or some other significant, nonroutine purpose.

The operating budget contains all of the items that would normally be considered part of the day-to-day functioning of the organization: the profit and loss statement of the organization. It begins with the volumes for the various departments (patient days, admissions, clinic visits, procedures, tests, etc.) and moves from there to revenue by combining business volume with price and collections information. Next come the expenses of the organization, principally staffing, but also supplies, purchased services, depreciation, and interest expense. This is the budget that managers deal with on an ongoing basis. Some refer to it as the "monthly budget" because it forms the basis of the monthly performance reports managers receive.

The equipment or capital budget deals with asset acquisition: mainly equipment, but renovations, new construction (normally kept separate and apart from a major building project), and any other planned "asset" acquisitions. Managers are involved with this budget perhaps two or three times a year: once when they request equipment, a second time when they learn if their request has been approved, and, finally, when they order and acquire the equipment.

The final budget, the cash flow budget, deals with money coming into the organization and flowing out of the organization regardless of the source or purpose. Cash can flow in from revenue, the sale of investments, contributions received, borrowing, and so on. Cash can be used to pay expenses, purchase equipment, make investments, pay down (retire) debt, and so on. This budget is the purview of the finance department, and operating managers are not involved with its formulation. They do, however, affect the management of the cash flow budget with, for example, their handling of registration and insurance data, spending on resources, and communicating with respect to equipment acquisition. Incorrect insurance and registration data can make a claim impossible to collect, thus reducing cash flow. Overspending the expense budget can drain cash from the organization and compromise other needs. Failure to accurately communicate planned purchase dates for high-priced pieces of equipment can wreck havoc with planned investments, interest expense, or investment income. So, while operating managers may not be directly involved with the organization's cash, their cooperation is essential to its proper and effective management.

REASONS TO PREPARE A BUDGET

A well-prepared budget requires a significant effort in finance and the operating departments and at all levels of the organization from individual

departments on up to executive row. There are seven reasons to prepare a budget: (1) to identify available resources, (2) to identify and prioritize needed resources, (3) to measure performance, (4) to control cost, (5) to increase awareness, (6) to ensure sound, prudent management, and (7) to deal with uncertainty.

Defining the outer boundary of spending, the available resources, for day-to-day operations and capital acquisition helps avoid situations in which organizations spend more than they can pay for—not a good thing. As with any venture, it is essential to know the limits. When a young person moves into his or her first apartment, he or she needs to know his or her monthly income (his or her available resources) to determine the affordability of an apartment before signing the lease.

The second reason to prepare a budget is to identify and prioritize needed resources. Knowing the volume of service contained in the budget allows managers to determine their needs for staffing, supplies, equipment, and so forth to achieve the objectives of their departments and, by extension, the organization. The best approach to prioritizing these needs is to group them into three categories. An A-B-C style prioritization allows managers to trim their requests from the bottom up should a reduction become necessary. In the OR, for example, sutures and anesthetic agents are clearly examples of the highest priority (the "A" items). Some added instrument sets (to complement those already in hand) might be in the second category (the "B" items), while two replacement office chairs for the clerical staff would be in the "nice to have, but not need to have" category (the "C" items).

Measuring performance is possible only if there is a properly prepared budget to use as a yardstick. Is a clinical lab, which has spent $198,000 on solutions in the month of February, performing well or poorly? It is hard to say without a budget for comparison. If the budget is $150,000, the lab director has a problem. If the budget is $200,000, then performance is considered to be acceptable. Lacking a budget, no appropriate judgment can be made.

Controlling costs is an important managerial function, and a well-prepared budget is an important tool in this effort. Sometimes referred to as "budgeting for control," it establishes boundaries. It tells what is expected and, conversely, what is not expected. But there is a problem with using a budget to focus solely on cost control. That approach is too narrow, focusing solely on costs and not on total financial performance. What if a department could generate $400,000 of additional revenue if it spent $100,000 that was not in its expense budget? What if the extra spending caused the manager to overspend his or her entire expense budget?

Would generating an extra $300,000 of profits ($400,000 – $100,000) be a good thing to do? Assuming the added revenue and profit is consistent with the mission and overall objectives of the organization, the answer should be a resounding "yes!" But if the manager focused only on expense budget compliance, the extra $300,000 would be missed. For that reason, the "enterprise approach" yields better overall financial results. In this approach, a manager focuses not just on expenses but also on revenue, and departmental profit. Using this approach, a manager would tolerate overspending the budget by $100,000 in order to generate $400,000 of added revenue. In effect, the manager becomes a mini-CEO (of his or her department) focusing on bottom-line performance as opposed to merely one aspect of performance. Clearly, cost control is essential, but all too often managers who focus only on cost miss opportunities to improve bottom-line performance.

Organizations in which everyone understands what is to be achieved significantly increase his or her chances of achieving it. Awareness is important not just for the management staff and leaders but also for the staff in the departments. In this way, everyone is moving in the same direction. When everyone knows what is to be achieved, anyone can identify opportunities to meet and even exceed expectations. No department in a health care organization exists in and of itself. All departments are connected to several others both upstream and downstream. Thus, all department managers should understand the objectives of all the other department managers. The ICU must understand what is expected of the operating rooms and the emergency department as well as the routine inpatient units and the step-down units and vice versa.

Consider the example of the spider and the spider web. Whenever a fly touches the spider web, the spider knows "lunch is served!" If, however, the individual strands of spider silk are disconnected so that no strand is connected to any other strand, flies can land all day long, but the spider will starve to death because it will not know the food has arrived. The same is true of an organization. Each department is like one of the strands of spider silk. All of the departments, not just some of them, must be linked together as if it was a spider web. The linkage is communication and knowledge of each other's objectives.

Often, however, this awareness is missing and the organization and the patients it is attempting to serve suffer because of it.

Sound, prudent management requires a periodic reassessment. Managers should look around to see how they are progressing in achieving their objectives. Are they ahead of plan or behind plan? Are there performance

problems that need resolution? This is no different than what happens in the clinical setting when the nursing unit day shift hands off to the evening shift. There is a pause and the dayshift reports on what has transpired with respect to each of the patients that the evening shift will be expected to care for during the next shift. Similarly, managers should call a time-out to assess how well they are complying with the budget. Information gained during this assessment can then be used to prepare the budget for the following year. At the departmental level, the best time to do this is when the monthly performance reports arrive. Managers can assess the situation, analyze their performance (variance analysis, spending analysis), and take action as indicated.

At the organizational level, the same sort of "where are we, where are we heading, is that where we want to be, and what should we do about it?" review can be undertaken as part of the initial stages of the annual budget preparation work. This can include SWOT (strengths, weaknesses, opportunities, and threats) analysis, PEST (political, environmental, social, and technological) analysis, and stakeholder analysis.

One of the biggest issues managers at all levels grapple with is uncertainty. Where is the organization heading? What's going to happen with health care reform, payment for services, volume of business, and so on? How do these issues impact my department, my organization? A budget cannot answer all the questions, but it can provide a forum for discussing actions to be contemplated or taken in the event a particular event happens. For larger, more significant issues such as payment reform, scenarios planning can be done. If event "A" happens, the organization will take certain actions. If event "B" happens instead, the organization will take a different set of actions.

Departments cannot set aside contingency money in the budget. This would be a terrible waste of valuable resources. If a hospital had 100 departments set aside just $1,000 for contingency, a total of $100,000 would be "hidden" from view and not available should an emergency arise or an opportunity present itself. At the institutional level, however, it is perfectly acceptable to set the same $100,000 aside under the control of the CEO and use it to deal with event "A" or event "B" or an unforeseen challenge or opportunity.

WHO PREPARES THE BUDGET?

The simple answer to the question "who prepares the budget?" is "everyone." The involvement of people throughout the organization results in a better budget. This is because involvement translates into ownership. Staff who

feel they "own" a piece of the budget will treat it differently. It has the effect of converting "your" (the manager's) budget to "our" (the workers') budget. This conversion is important if success is to be achieved. Workers who "own" a stake in the department's performance will work more diligently to achieve success. To see the benefits of ownership, one need not look further than rental cars. How many people who rent cars ever take them to the car wash before returning them to the rental agency? They have no stake in the car's ownership. The agency, which owns the cars, however, does wash them—after every rental. The agency has the ownership stake while the renter does not, and this simple fact drives their behaviors. Similarly, department budgets benefit from worker ownership. Some organizations speak of their work staff as being either "owners" or "renters." The better organizations strive to recruit and retain only owners for their workforce.

Can a hospital's chief operating officer (COO) really control a hospital operating budget? Can the chief financial officer (CFO)? Probably not alone. But if each worker feels a sense of ownership of some portion of that budget, success is far more likely.

THE FLOW OF INFORMATION

The separation between executive row and the departments can be sizeable. The distance is not measured in feet or miles, but in information—what, why, and how things are to be done in the budget year. At the executive level, the CEO and the other corporate officers know what the organization needs to achieve. At the department level, managers and workers know how things work. To be successful, this knowledge must be shared. But it is not enough for the CEO to tell department mangers what needs to be achieved (the objectives); he or she must also explain the "why" behind the objectives. For example, why is the organization intent on achieving magnet status? Or why is a reduction in length of stay important? Knowing why allows managers, and workers at any level for that matter, to be more flexible in pursuing the objectives. It also allows them to pursue alternate strategies that produce the same or better results. Figure 5.2 illustrates the pathways of communication.

It is also important not to exclude the workers from these conversations. The workers make things happen. And despite the best intentions of leadership and management, if the workers are blind to what needs to be achieved, it is likely that it will not be achieved. This applies to subordinate managers as well. In fact, it applies to everyone at every level of the organization.

Figure 5.2
Information must flow in multiple directions. The organization's leadership must inform department-level managers about what needs to happen and why (the down arrow). Department management needs to describe how that will happen (the up arrow). Finally, department managers must communicate across the organization (the horizontal arrow) to support each other and achieve success.

The COO of a hospital has received comparative information about the cost of providing services. The information suggests the hospital's medication expense is 5% higher than the most costly hospital in the benchmark data set. Resolution of this problem can play out one of two ways, as illustrated in the following conversations. The COO's how-to-do-it approach goes like this.

COO: "Burt, we're spending way too much on drugs. I want you to reduce our consumption of antibiotics and antineoplastics."

That approach can adversely affect patient care by arbitrarily forcing a reduction without understanding the consequences. A prudent approach is

to tell the pharmacy director *what* needs to happen and let him determine *how* that can be accomplished. A conversation might go something like this:

COO:	"Burt, we have to reduce medication expense by 5%. Here's the latest benchmarking data. What can we do?"
Pharmacy director:	(after a careful study of options) "If we can hire some clinical pharmacists, we'll actually be able to reduce utilization beyond the 5% target as well as cover the cost of the added positions."

This is a far better approach. Rather than tell the director how to achieve the reduction, this COO merely tells what needs to be done and allows the director—the person most familiar with medication usage, cost, and consequences—to develop a workable approach.

IMPORTANT PLANNING DOCUMENTS

One of the first and most important documents to review before starting the budgeting process is the budget guidelines document provided by the finance department. This document contains such information as the timeline for budget preparation (when departments are due to submit their budget requests, when review meetings will be held, etc.), the organization's position on new program spending (it might say, e.g., that no new programs will be funded due to tight resource constraints), anticipated rates of inflation, projected number of admissions, average length of stay, and clinic visits. While this document may be boring—it isn't the most exciting prose ever written—it does contain valuable information and should be read carefully. At a minimum, the executive summary and the budget timeline should be carefully studied.

When assembling a budget, few review the organization's mission statement. But the mission is what drives the organization and should be one of the guiding principles used in formulating the budget. Does it make sense, assuming the program is not a financial drain on the organization, to propose as a new program the opening of a geriatrics day care center at a pediatrics hospital? Of course not. Such a venture, while potentially profitable, is inconsistent with the mission of a pediatrics hospital. On the other hand, does it make sense vis-á-vis its mission for a geriatrics center to offer child day care? It might—especially if the program was designed as an assist

with staff recruitment and retention. The fact that the clinical literature suggests that both little children and older adults benefit from proximity to each other supports this venture and its mission-friendly nature.

The strategic plan of the organization contains valuable information about long-term goals, which can be used to influence the short term that is dealt with in the immediately upcoming year's budget. As seen in Figure 5.3, if the hospital is going to be operating a new technology in budget year 20X4, resources need to be provided in both the fiscal 20X2 and 20X3 budgets.

The budget for fiscal year 20X2 will cover the costs of researching the technology, obtaining necessary regulatory approvals, equipment purchase, and so on. The 20X3 budget will need to cover the cost of staff recruitment and training, marketing, and the like in anticipation of beginning operations on the first day of fiscal year 20X4. Finally, the budget for 20X4 will contain the resources needed to finish construction and installation and operate the technology (staff, supplies, etc.). Not thinking long

Action or Events	20X2	20X3	20X4
Review and assess technology	x		
Select vendor	x		
Place order	x		
CON or licensure issues	x		
Design new facility	x		
Construct facilities	x	x	x
Equipment installation		x	x
Recruit additional staff		x	
Staff training and orientation		x	
Begin shakedown operations		x	
Place in service			x

Figure 5.3
To successfully begin operating a new technology in fiscal year 20X4, it may be necessary to budget resources in the two prior years as well.

term and not providing resources with sufficient lead time can compromise success.

Often, market analysis focuses on zip codes to determine primary and secondary patient catchment areas (What percent of patients are coming to the hospital from West Southbury, from East Northbury, and so on?). And while this information is vital, it is not all that should be considered in the way of market information. The services provided by hospitals and other health care providers are based on clinical science and influenced by the prevalence of disease. Demographic and epidemiological analysis needs to be reviewed and carefully considered when preparing a budget. Is the population of the primary catchment area aging and thus in need of programs for geriatric patients? Does there seem to be a high incidence of cancer, suggesting the need for oncology programs? If so, how will such programs be implemented? Will there be a mix of treatment and prevention programs? What about recruitment of gerontologists and oncologists? Will an oncology program include radiotherapy, tomotherapy, gamma knife or cyber knife services and what will such equipment cost? What are the facility needs?

Market analysis can also assist in deciding how to allocate resources. As seen in Figure 5.4, the various service lines can be arrayed on a profit/market

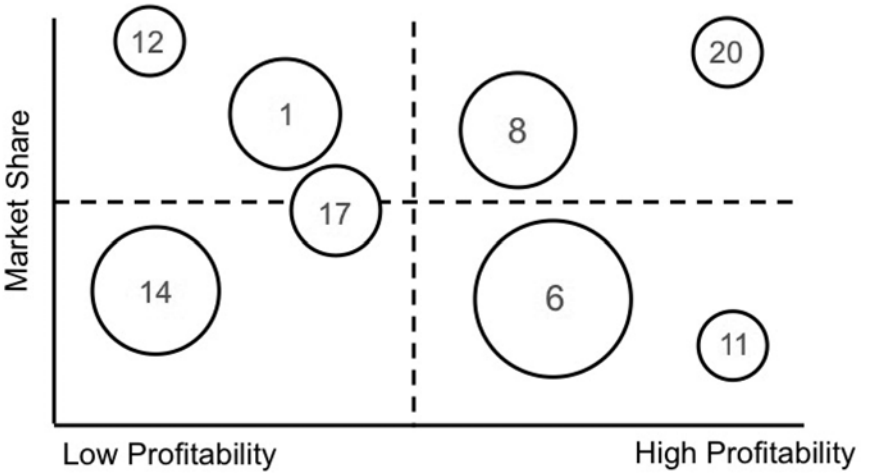

Figure 5.4
Moving counterclockwise from upper right, the four quadrants in this display represent high market share and high profit, high market share and low or no profit, low market share and low or no profit, and low market share and high profit.

share matrix so one can easily see which ones are most profitable and which have the highest market share. In the figure, the size of the disk indicates the proportion of the organization's business represented by the service line. While this sort of display cannot be the sole method used to allocate scarce resources, it can help influence decision making, helping determine which service lines should be emphasized or de-emphasized during the budgeting process. For example, resources might be diverted from a service line with low market share and low profitability in order to bolster a highly profitable service line that is suffering from a decline in market share. As seen in the figure, the organization uses the major diagnostic categories (the MDCs) to display several hospital service lines that have been ranked on the basis of the individual profitability and market share. A complete list of the major diagnostic categories can be found in Appendix 7.

It might be decided that additional budgetary resources would be allocated to MDC 6 (the high profit, low market share digestive system service line) in the hopes that such added resources would allow for market share growth so the service line could rise to the high-profit, high-share quadrant. Similarly, a decision could be made to expand MDC 8 (musculoskeletal and connective tissue), which is highly profitable, in order to subsidize MDC 14 (pregnancy and childbirth), which is neither profitable nor high share, but which might be a core mission service.

SWOT and PEST, two other forms of analysis, are valuable to the development of the budget at the organizational level. The information gathered via these analyses can influence decisions on new program initiatives, resource allocation, new technology investments, and so on. In preparing SWOT analysis, care should be taken to be as objective and candid as possible, especially in describing organizational weaknesses and environmental or competitor threats. This is not the time to sugarcoat bad news. An honest appraisal can lead the organization to improvement, while an appraisal that minimizes weaknesses and threats can lead to failure.

While department managers are constructing their individual budgets, they should be careful to examine more than just their own individual goals and objectives. It is essential to examine the objectives of all of the other departments in the organization. This is because of the interconnectedness of all departments.

Consider the situation of the operating room (OR), which is seeking to boost the number of cases by opening two new rooms to support a group of newly recruited surgeons. At the same time, the manager preparing the budget for the patient transportation department has cost reduction as his prime objective and to

achieve it has decided to reduce the staff from 15 patient transporters to 10 using attrition to avoid a layoff. This one-third reduction of his staff will allow him to achieve his objective, but what of the ORs? Will the objective of increasing the number of surgical cases be achieved? Or will it be compromised because insufficient transporter resources will be available to support the expanded caseload? Knowing that the operating rooms were anticipating a significant growth in case volume, it is highly doubtful that the transportation manager would have reduced staffing and probably would have looked for a cost reduction in some other area.

Because health care organizations, particularly hospitals, are so compartmentalized, it is essential that managers preparing a budget consciously find out about the objectives of all the other departments as well as the organization as a whole. In this way they will assure themselves of preparing a budget that both is consistent with overall organizational direction and provides a good chance to succeed.

Finally, managers should be cognizant that the operating budget and capital equipment budget often are overseen by different executives and are prepared using different timetables. It is, therefore, possible for one budget to be "approved" before the other. This has the potential to make for interesting and embarrassing situations. What happens to the organization that approves a shuttle van for transporting patients between an assisted living facility and the hospital in the capital budget, but fails to approve the driver in the operating budget? Or approves new physical therapists in the operating budget but does not approve the *work hardening equipment* they need in the capital budget? Managers can play a role in avoiding this sort of uncoordinated planning by carefully following any and all budget requests. If one is disapproved, they should ask that its companion request be deleted. Conversely, if an item in one budget is approved, that should be communicated so it can be taken it into account as the second budget is reviewed. This way, the organization does not devote resources to an initiative that cannot succeed because it has not been properly planned for.

SOME POINTS TO KEEP IN MIND

Managers, especially those preparing a budget for the first time, should be mindful of the "facts of life" when it comes to budgeting. No budget ever moves from a blank page to a finished and approved budget. But new managers often feel that if that is not the case they have somehow failed. In turn, this sense of failure leads to an erosion of confidence that makes budgeting even more difficult for them. No budget is ever completed in a

single work session. They always come bouncing back. In fact, managers whose budgets do not come back for reconsideration, revision, and further discussion should worry that adjustments are being made without their knowledge or involvement—a fairly good prescription for disaster at the department level.

A well-constructed budget benefits from a process that is iterative in nature—a healthy back and forth that results in the best possible allocation of resources.

As seen in Figure 5.5, the process begins with a delineation of the overall goals and objectives of the organization. These organizational goals and objectives are then converted to objectives for the individual departments. An overall organizational goal of reducing length of stay, for example, might result in an objective for the surgical ICU to reduce the rate of ventilator-associated pneumonias. Once the departments have determined their individual objectives for the budget year, workload estimates can be developed. For example, based on a surgical caseload of X cases, the head

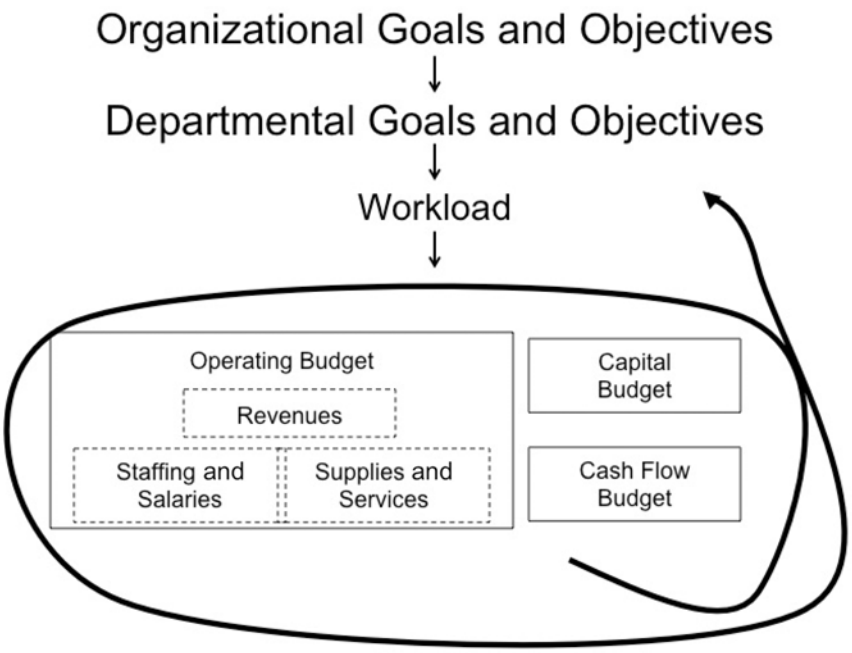

Figure 5.5
Budgeting is an iterative process that begins with and flows from the organizational goals and objectives.

of the transportation department may determine that Y number of transports will be required. At this point, the budget has been converted from words to numbers and from this point forward it will all be about the numbers. Once the workload is determined, estimates can be prepared for revenues, staffing levels and the accompanying salaries and fringe benefit costs, and the supply and service amounts. At the same time, a capital budget can be put together with the necessary equipment and facilities to support the workload. In the finance department, all the cash inflows and outflows associated with the revenues, expenses, and equipment acquisitions along with other financial transactions (borrowing, cashing in of investments, investing activities, etc.) will be combined to develop a cash budget. However, once all of this has been assembled, it does not mean that the budget process is finished. The question remains: does this budget achieve the organizational goals and objectives? If it does, the process is finished and preparations can be made to take the budget to the board for its approval. But if, as is more likely the case, the budget does not achieve all of the organizational goals and objectives, the process must be reworked until it does. Managers must be aware that this iteration process can result in their budget request being returned for reconsideration; as previously stated, that is not a bad thing.

Two other challenges face the executive team as the budget is put together. The first is to make sure that the operating budget, capital budget, and cash budget are fully integrated and complement each other. Sufficient revenues must be generated in the operating budget to fuel the cash budget. The cash budget must be able to support the start-up costs of new initiatives and buy the equipment in the capital budget. The equipment purchased in the capital budget must generate the revenues included in the operating budget, and so on. If the three budgets are not appropriately integrated, problems can develop during the operating year that make achievement of the overall objectives virtually impossible.

The second challenge is to balance the needs of the various departments. These departments fall into three broad categories: direct patient care centers (primarily the inpatient nursing units, but also the emergency department and clinics), the ancillary services (labs, imaging, physical and occupational therapy, etc.), and the support centers (environmental services, maintenance, social service, medical records, etc.). When resources are constrained, resource allocation must be prioritized. A problem can develop if insufficient resources are allocated to the support centers to support the work of the patient care departments. If additional resources are provided for the nursing department to handle a significant increase in the number of surgical cases, but no additional money is provided for

the transport department, it may become impossible for the transportation department to provide enough transport resources to move all the patients in a timely enough manner to support the expanded OR schedule. As a result, the operating rooms back up, cases are delayed or canceled, the planned revenue does not materialize, and a crisis develops. When cost reduction is a principal goal during the budgeting process and budget cuts are limited to the support centers, it can become very difficult for the patient care centers to do their jobs. A reduction in the social services department, for example, can make it difficult to discharge patients in a timely enough manner to take the next admission or to avoid an ED backup. The executive team must strike a proper balance and allocate resources across the board based on the overall objectives of the organization. If they remove resources to reduce costs, they must do so very carefully. In terms of reducing resources, the organization should be thought of in its pyramidal shape. Limiting the reductions to the bottom of that pyramid can result in dysfunctionality throughout the organization. If resources do need to be cut, it is far better to trim the sides of the pyramid than the bottom.

THE NUMBERS GAME

Sometimes, managers feel their requests are being treated like just another bunch of numbers rather than the real need they represent. It is true that once past the words of the goals and objectives, the budget process does become something of a numbers exercise. It is also true that the budget can become formula driven as opposed to needs driven. When this happens, there are consequences for managers at the department level and, as well, at the executive level. Table 5.2 provides an example of a formula approach to developing a department budget for fiscal year 20X2.

Table 5.2
Budget Formula versus Operational Reality

Formula Approach		Reality Approach
Current (FY 20X1) budget	Starting point	Annualized YTD spending
+ Inflation	Inflation	+ Inflation
+/– Volume	Volume	+/– Volume
+/– Adjustments	Adjustments	+/– Adjustments
– Cost reductions	Cost reduction	– Achievable cost reductions
New (FY 20X2) budget	Ending point	Real (FY 20X2) needs

The table demonstrates the overall approach. A starting point (either the current year's budget, or the annualized level of year-to-date actual spending for the same budget year) is modified by a series of adjustments. Inflation is added. If volume were expected to rise, the budget would be increased. If volume were expected to decline, it would be decreased. The "adjustments" line will be different depending on who is preparing the budget. If centrally prepared, there is likely to be no knowledge of any needs. If prepared at the department level, such adjustments might include, for example, money to cover unfunded legislative or regulatory mandates (such as the Health Insurance Portability and Accountability Act or HIPAA as it is referred to) or a need for additional supplies associated with a new initiative. Finally, cost reduction comes into play as a reduction to the budget. The sum of all of this is the budget for the new year.

But is this approach appropriate? Can a totally mathematical approach developed apart from the knowledge and needs of the department managers possibly arrive at a workable budget? The answer to all of these questions is a resounding "no." Because the formula approach relies solely on the calculus of additions and deductions, it must assume a steady state—no changes in the internal or external environment other than inflation and volume. But the real world that managers deal with is far from static or steady state.

Table 5.3 (which alters Table 5.2 to show dollar amounts) demonstrates how the two approaches can yield such different results based on different starting points as well as missing information that a centralized, formula-based approach lacks. As see in the table, the formula begins with the current budget of $35,000,000, while the reality approach begins with the actual year-to-date annualized spending of $37,000,000. That means that

Table 5.3
Budget Formula versus Operational Reality

Formula Approach		Reality Approach
$35,000,000	Starting point	$37,000,000
+ 1,050,000	Inflation	+ 1,110,000
+ 1,800,000	Volume	+ 1,890,000
–	Adjustments	+ 500,000
– 350,000	Cost reduction	– 300,000
$37,500,000	New budget	$40,200,000

the monetary amounts for inflation and volume will also be different even if the same rates of change are used in the calculations. The amount of adjustments is also going to be different because only the manager knows what needs to be included.

Finally, the amount of cost reduction differs because the reality approach has been tempered by the manager's knowledge of what can and cannot be cut—something no formula can ever accurately determine.

JUSTIFYING THE NEED

With a difference of just over $3 million in the two approaches, the effected manager's challenge is to develop a way to justify the $40 million budget request. If the difference was a few hundred thousand dollars, a manager might put on a brave face and explain that they needed more; but for the good of the organization, "We'll somehow make it work."

But with a difference of more than 7%, the manager will be hard pressed to achieve the objectives and comply with the budget. What to do? What arguments can be used to justify the need for the extra resources? For years, managers have struggled with this issue and for years they have failed to make the case. It may be time for a change in strategy. Instead of explaining and advocating for the needed resources, the $3 million in this case, managers should instead focus the discussion on the consequences of the resource shortage. Talk about what will not be done if the resources are not provided. Make sure the decision makers understand the consequences of their decisions. For too long, decision makers were isolated from the consequences—the department managers had to deal with them. Rather than arguments, which can alienate, switch to explaining the consequences in calm, nonjudgmental, but nonetheless accurate, terms. Avoid a litany of dire consequences, which really will likely not come to pass: patients will die, the clinics will be closed on Fridays, patients will be required to bring their own sutures, and so on. Instead, list the real potential outcomes: the insufficient staffing in the PACU will likely back up the ORs and the ED, the lack of a preventive maintenance contract on the CTs and MRIs has the potential to compromise the revenue stream if the machines go down for any length of time while waiting for a repair team to arrive, insufficient resources to support the staff of clinical pharmacists will have an unfavorable impact on pharmaceutical spending.

Employing this approach, managers fulfill their responsibility to inform those above them in the organization and, at the same time, avoid the unpleasantness of confrontational budget meetings focused solely on

making their point. Moreover, key decision makers are no longer shielded from the consequences of their resource allocation decisions.

WHERE TO BEGIN

A budget has to begin somewhere. The challenge is to use the best starting point. Which is better, a budget based on the current one (budget-to-budget or B2B) or one based on year-to-date annualized spending (actual-to-budget or A2B)? The answer, frankly, is "neither." Using the B2B approach rewards good performers by not taking away resources they haven't consumed (it's the antidote to the infamous "spend it or lost it" approach). But this approach can also put good managers in a bad hole to begin the new budget year by not recognizing resource shortages they cannot manage their way around. The following scenarios demonstrate what can happen when either a strict B2B or A2B approach is taken.

The manager of the Environmental Services Department at University Medical Center prides herself on not overspending the expense budget. Six months ago, however, new state regulations required a special, and far more costly, method for handling infectious waste. To comply with the regulations, the department will incur an annualized cost of $120,000, which the current budget does not include. If the budget-to-budget approach is taken, the Environmental Services Department will come up short; since the current budget does not include the $120,000, neither will the new budget. In this case, the B2B approach hurts a good manager.

Moose Jaw Medical Center is a small hospital that relies heavily on volunteers. The Volunteer Services Department has just two paid positions: a director and a secretary. The secretary who earns $36,000 a year was out on medical leave for the first three months of the year. Part of that time was unpaid. As a result, the total salary expense the department will incur for the year is only $27,000. Using the B2B approach, the department budget will continue to carry $36,000 for the secretary position and the manager is not penalized by the B2B approach.

At Sunset Memorial, the coming year's budget is based on actual spending (the A2B approach). During the current year, the clinical lab received a $50,000 refund from a manufacturer to compensate for a shipment of defective petri dishes made to the hospital two years ago. Because of this, the lab's actual spending in the current year is lower than the budget. For the following year, the A2B approach will yield a smaller budget that will penalize the manager of the labs for pursuing the refund.

The director of guest services at Moonbeam General Hospital has hired two additional guest service workers to accommodate patient inquiries. This move causes her to spend $130,000 for salaries and fringe benefits more than is in the budget. Using the actual-to-budget approach, the department's next year budget

would be increased by $130,000 because the starting point for the calculations would be the higher year-to-date annualized amount as opposed to the current budget. In this case, the manager is rewarded for overspending with a bigger budget for the new fiscal year.

The overall approach taken to budgeting provides managers with incentives to either comply or not comply with their budgets. The B2B approach generally rewards managers who conserve resources and underspend their budgets while penalizing those who overspend. The A2B approach rewards those who spend more than is budgeted ("the more you spend the more you get") and penalizes those who spend less than their budget ("spend it or lose it"). It can cause some managers to spend frivolously to avoid losing budget.

The best approach is to base the new budget on the old budget, but with the ability of managers to make the case for added resources based on circumstances they cannot control—new environmental regulations, state mandates, and so on.

SOURCES OF BUDGET INFORMATION

The information needed to prepare a budget is available throughout the environment, both internally and externally. When preparing the personnel budget, for example, ask the personnel department about salary rates, plans for any general increases in wage rates, rules for merit increases, the potential for hiring new staff during the upcoming budget, training program costs, and so on.

When it comes to supplies and other consumable items, the materials management department may be able to help with information on costs and usage patterns. The accounting department may be a source of information about inflation. The facilities, maintenance, and engineering departments can provide valuable insights regarding potential equipment purchases.

Often, the best source of information necessary to the budget process is overlooked. Managers and supervisors are probably the most knowledgeable about departmental performance because of their day-to-day involvement. They possess a hands-on understanding of how and why the department functions and information about obsolete equipment, the impact of new programs, and so on. Their input in preparing the budget can be invaluable. The director of the operating rooms, for example, has valuable information (surgical case volume) that can make for a better

budget in the transportation department. Similarly, the nutrition services department can benefit from knowing what nursing anticipates for inpatient volume.

Knowing about constraints is also important. What is and is not available resource-wise? Is the next fiscal year an austerity one requiring tight limits on spending growth? What latitude do managers have in requesting funds for new initiatives? What rules are to be followed in putting together the budget request? Though not technically "information," this level of understanding can be quite valuable.

Industry norms and standards can also be helpful in determining nurse-to-patient staffing ratios, productivity levels, and the like. Often, this information is available via professional associations and industry trade groups, consulting firms, and even other institutions. Getting outside the organization can also be valuable. Managers should attend trade shows periodically to keep abreast of the latest developments in equipment, supplies, and technology. While equipment and supply salesman can provide a lot of information, their input should be used with caution. The best people to talk to at tradeshows are not the salesmen but the other attendees. It is a great opportunity to swap information, build a professional network, and learn from each other.

Ask questions—the more, the better. Don't worry about asking a "dumb" question; in reality a dumb question is often the one that no one had the nerve to ask but that everyone had thought about asking. The uncomfortable feeling sometimes associated with asking a lot of questions can often be mitigated by prefacing the questions with such statements as "let me play devil's advocate" or "we'll need to answer a lot of questions from the boss, how do we explain this?" In this way the onus shifts to an unidentified someone else making it easier to ask the tough, pointed questions that must be asked.

NOTE

1. "Joe's Journal: On Creating the Future," Drucker Institute, May 24, 2011, http://www.druckerinstitute.com/2011/05/joes-journal-on-creating-the-future/.

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Chapter 6

THE OPERATING BUDGET

One of the first impressions to be dealt with in preparing a budget, either for a department or for an entire institution, is that it is an overwhelming task involving millions of dollars, hundreds of people, expensive equipment, outside environmental threats and opportunities, third-party reimbursement mechanisms, patient's ability to pay, and so on. Putting together a budget, however, is really as elementary as multiplying some numbers, adding other numbers, and so on. It is a mechanical process that expresses, in numerical terms, the goals and objectives that form the foundation of the budget.

INTERRELATIONSHIPS

If the elements of the annual plan, or budget, are arrayed using a matrix format, as displayed in Figure 6.1, the relationships can be seen more easily. Notice the relationship between the volume budget and all of the elements of revenue and expense. Similarly, the revenue budget affects all other elements and acts as a constraint on all budgets by establishing the "affordability" of all of the other elements.

As the process of putting the budget together begins, these interrelationships must be kept in mind. Otherwise, costly and embarrassing errors can creep into the budget. All of the elements must blend together. They must complement and support each other.

If there is one key to dealing with the interrelationships of the budget elements, it is orchestration. Just as orchestration is responsible for the rich, full sound of a symphony, so too orchestration brings out the best in budgeting. Consider, for example, the symphony orchestra in which each section plays different instruments and different notes at different

	Volume	Prices	Revenue	Personnel	Supplies and Other	Equipment and Renovations	New Programs	Cash
Volume		✔	✔	✔	✔	✔	✔	
Prices	✔		✔					
Revenue (including deductions)	✔	✔		✔	✔	✔	✔	✔
Personnel (including salary and fringe costs)	✔		✔		✔	✔	✔	✔
Supplies and Other	✔		✔	✔		✔	✔	✔
Equipment and Renovations	✔		✔	✔	✔		✔	✔
New Programs	✔		✔	✔	✔	✔		✔
Cash			✔	✔	✔	✔	✔	
Each checkmark at the intersection of a column and row signifies an interrelationship								

Figure 6.1
Each element of the budget touches upon and influences many other elements.

times. Orchestration makes the difference between the din one hears during warm-up and the recognizable sounds that come forth once the conductor taps his or her baton.

It is vital that the same information used to prepare one element of the budget be used to prepare all others. It is clear that operating expense and capital budgets based on an 80% occupancy rate and the revenue budget based on an 85% occupancy rate are inconsistent. The budget is compromised before the year even starts. If the 85% occupancy rate is not achieved, the shortfall in revenue, and cash coming into the organization, can compromise the ability to purchase the planned equipment or hire the necessary staff to provide care. Conversely, if the occupancy rate were to hit 85%, the operating expense budget might lack sufficient resources. Plans for new program implementations, expansion of existing programs, and the enhancement of older (but still viable) services may fall by the wayside. Beyond that, there is very real embarrassment associated with putting together a budget that does not make sense. Finally, since the budget is an important management tool, faulty budgeting leads to faulty management, which, in turn, leads to a waste of valuable resources.

SOURCES OF INFORMATION

One question confronts many managers: where does one find all the information needed to prepare the budget? The best answer is that the information is available throughout the environment. When preparing the personnel budget, for example, ask the personnel department about salary rates, any planned general increases in the wage rates, the rules for merit increases, the potential for hiring new staff during the upcoming budget period, training programs, and any other potential personnel expenses.

When it comes to supplies and other consumable items, the purchasing department or storeroom may be able to help with information on cost and usage patterns. The accounting department may be a source of information about inflation. Table 6.1 lists some of the factors that influence the various

Table 6.1
Sources of Budget Information

Budget Element	Influencing Factors and Sources of Information
Organizational goals and objectives[a]	• Governing board • Upper management • External environment
Departmental goals and objectives	• Organizational goals and objectives • Department management
Volume	• Upper management • Accounting department (for historical data) • Departmental volume relationships • New program influences • Physician practice patterns • Historical trends • Regulatory/competitive issues • Technology effect • Process improvements initiatives • Marketing initiatives • Demand altering reimbursement changes
Gross and net revenue[b]	• Volume projections • Prices • Regulatory/competitive issues • Pricing strategies • Mix of third-party payers • Third-party discount arrangements • Accounts receivable management effectiveness

(*continued*)

Table 6.1 (*continued*)

Budget Element	Influencing Factors and Sources of Information
	• Organizational and departmental goals and objectives • Patient insurance information • Reimbursement changes • Federal mandates (e.g., Hill-Burton Act, EMTALA) • Charity care policies and targets • Discount and collection policies
Other operating revenue[b]	• Activities related to such non-care activities as gift shops, cafeteria sales, and parking facilities
Personnel	• Volume • Patient acuity • Productivity data • Targeted staffing ratios and patterns • Payroll department (for pay rates) • HR department (planned salary and benefits changes) • Accounting (for cost of fringe benefits per worker) • Labor contracts • Organizational goals and objectives • New program staffing needs • Technology effect • Process improvement initiatives • Budgetary constraints
Supplies and other operating expenses	• Volume • Usage trends and patterns • Fixed/variable expense profile • Accounting or materials management (for inflation data) • Organizational goals and objectives • Budgetary constraints • New program needs • Technology effect
Interest and depreciation[a]	• Level of organizational debt and repayment schedule • Interest rates • Projected cash inflows and outflows • Fixed asset values • Depreciation policies • Capital budget

[a]Not normally prepared at the departmental level.

[b]May occasionally be prepared by department-level personnel but customarily prepared centrally.

elements of the budget and the sources of information that managers can look to for help in preparing the budget. Often, the best source of information for budgeting is overlooked. Managers and supervisors are probably the most knowledgeable about departmental performance because of their day-to-day involvement. They possess the hands-on understanding of how and why a department functions. Their input in preparing the budget can be invaluable. Finally, the best way to gather information is to ask questions—the more, the better. Do not worry about asking a "dumb" question. In reality, a dumb question is often the one that no one has the nerve to ask but that everyone has thought about asking. The uncomfortable feeling sometimes associated with asking a lot of questions can almost always be mitigated by prefacing the question with such statements as "Let me play devil's advocate," or "We will need to answer a lot of questions from higher up in the organization, and we should prepare our answers now. How will we answer these questions?" In this way, the onus shifts to an unidentified someone else. It makes it easier to ask the tough, pointed questions that must be asked.

AN ORDERLY APPROACH

After the raw data have been gathered both from outside sources and from within the department, it is time to "put pencil to paper" and prepare the department budget. The best way to approach this is by following an orderly progression from one element to the next. After reviewing the appropriate documents as explained in Chapter 5, the recommended sequence is as follows:

- statement of goals and objectives
- volume budget
- revenue budget (if prepared at the department level)
- personnel budget (sometimes including fringe benefits)
- supplies and services budget

Logic plays a major role in determining this sequence. A budget cannot be prepared until two questions have been answered: (1) what is to be accomplished? and (2) what are the expectations? Thus, the statement of goals and objectives is logically the first step in the process. This tells what the department hopes to accomplish (its own goals and objectives for the budget year) and what upper management expects of the department (its

departmentalization of the organization's goals and objectives). Because budgeting is mainly a mathematical exercise and because goals and objectives are customarily expressed using words, it is necessary to provide a transition from words to numbers. This is the role of the volume budget. It provides the translation of goals and objectives into useful mathematical statements of what the department will be doing: the workload of patient days, visits, tests, meals served, relative value units (RVUs), and so on. The remaining budgets are based on these numbers. The revenue budget comes next. Of the budgets that involve money, this should be the first because it sets a boundary—an upper spending limit—that constrains the size of the operating and capital budgets.

STATEMENT OF GOALS AND OBJECTIVES

Whether for the entire hospital or a single department, the statement of goals and objectives should be a carefully written document spelling out the overall goals of the organization in general terms (become a high-quality provider and achieve a national quality designation of some sort, increase market share in the northeast corridor, examine collaborations with an academic medical center, etc.) as well as the specific objectives to be achieved as part of achieving the goals. Often, goals and objectives can be thought of as long term (the goals) and short term (the objectives). Strategic plans tend to be driven by goals, while budgets are driven by the objectives.

Well-written objectives, whether at the organizational or departmental level, should meet the SMART criteria: Specific, Measurable, Achievable, Relevant, Time specific. They should clearly align with one or more of the goals.

A manager might write an objective like this: reduce the incidence of hospital-acquired infections (HAIs) during the budget year. And while this seems fine, it fails to meet the SMART criteria. A well-written objective would be far more specific: reduce the incidence of catheter-associated urinary tract infections (CAUTIs) to no more than three for budget year 20X1. This objective meets the SMART criteria. It is specific to CAUTIs as opposed to infections in general, is measurable and achievable, is relevant to the goal of becoming a high-quality provider, and has a time constraint—to be accomplished during budget year 20X1. This objective makes it easier to budget the resources needed to achieve it.

THE VOLUME BUDGET

Every department and every function in a health care organization has its own way of describing volume. Some examples include patient days, visits,

and procedures. Whatever description is used should be associated with both resources and the potential to generate revenue. The manager of an inpatient nursing unit might use the average daily census to determine resource needs, but might also select and monitor patient days or cases because revenue is associated with those statistics. In the plumbing shop, the manager might track volume in terms of work orders received or completed. In fact, tracking both would provide more useful information for the manager. In looking at both, he or she will have information about both resources needed (work orders received) and responsiveness (work orders completed).

While the finance department may require the tracking of specific statistics for some departments and functions, managers are free to track whatever statistics, including informal ones, they feel best inform them about their business volume and resource use. In the environmental services department, for example, while finance may use "square feet cleaned" as a measure, the manager may want to capture and track discharges, deaths, and transfers because those actions drive his resource use. Rooms are not cleaned because they have square feet, but because of patient activity, principally discharges, deaths, and transfers. Further, the terminal cleaning routine for a room that has just been vacated by a discharged patient will likely be more resource intense than the daily cleaning routine performed over the course of that patient's hospital stay.

Some managers believe that a preliminary estimate or order of magnitude value can be a good starting point. An imaging department manager might look at the overall capacity of her department and use 85% of this value as a starting point and refine it from there. The director of social services might look at the current level of case volume and decide to annualize that amount plus a growth factor for the budget year's volume.

Sometimes, a collaborative effort produces the best result. The volume for the operating rooms might be based not only on the current usage rate but also on information from the hospital's leading surgeons about their plans for the budget year. A manager's previous experience with trends and patterns of volume—seasonal variations, for example—may also be helpful.

Generally, however, two kinds of situations can be encountered in preparing the volume budget. Either a department's volume is dependent on another department's volume (as in the case of ancillary services), or it is independent of other departments' volumes.

Independent volume. The simplest situation is the one involving independent volumes—visits in a clinic or patient days on an inpatient nursing unit. Volume in departments or setting like these is generally established as part of an organization's overall set of objectives or by estimating the demand for services.

The mathematics of volume calculations involves simple math. For an inpatient nursing unit, for example, it involves the number of calendar days, beds available, occupancy rates, and average census levels. Calculating a budget for total patient days is shown in Table 6.2.

Following these calculations, the manager can base the rest of the budget (revenue, staffing and salary costs, supplies, etc.) on an average daily census of 20 patients. In addition, the manager knows that the absolute capacity of the unit is 25 patients per day or 9,125 total annual patient days. The only thing missing is the notion of patient acuity, which can have an impact on resource need.

Knowledge of operating capacity is essential to success, but, regrettably, too many health care managers are unaware of their department's capacity. In the examples cited earlier, had someone inadvertently assigned a volume budget of 9,521 patient days (perhaps as a result of a typographical error or a misreading of the numbers), the budget for the entire unit could be significantly misstated unless the manager knew that the unit operating capacity was only 9,125 patient days.

Similarly, consider an outpatient clinic that has seen its volume rise for the past five fiscal years, as shown in Table 6.3.

Table 6.2
Inpatient Volume Calculations

Nursing unit bed capacity	25
Calendar days	365
Bed days (total capacity)	9,125
Budgeted occupancy rate	80%
Patient days budget	7,300
Budgeted average daily census	20

Table 6.3
Outpatient Clinic Visits

Fiscal Year	Number of Visits
20X1 actual	12,000
20X2 actual	13,200
20X3 actual	14,520
20X4 actual	16,000
20X5 YTD annualized	17,600

The budget for fiscal year 20X6 is arrived at in two steps. First, the visit counts are examined to see if there is a trend and, should there be one, to determine if it will continue as is, accelerate, or decelerate. In this case, the trend is an upward growth of 10% each year. If that were expected to continue, the volume budget would be calculated by adding 10% to the 20X5 year to date (YTD) annualized volume. Assuming there is no capacity limit, the visit budget for 20X6 would be set at 19,360 visits, as shown in Table 6.4.

Consider some additional information about this clinic. It includes five exam rooms, each of which can handle a maximum of two exams per hour during a five-day-a-week (eight hours/day) schedule. It is closed for 10 holidays each year. This translates into a capacity of 20,000 visits a year, as seen in Table 6.5.

Assuming the trend in visit growth (10% per year) continued into fiscal year 20X6, the initial 20X7 budget calculation might be 21,296, as seen in Table 6.6, but this amount would be constrained by the capacity limit of 20,000 visits. Prudence would suggest that the clinic could not sustain running at 100% of capacity, so a lower-volume estimate would be used, perhaps even holding at the 20X6 estimate of 19,360.

Table 6.4
Budgeting for Volume

20X5 estimated volume	17,600
Annual growth rate	10%
Annual volume increment	1,760
20X6 budgeted volume	19,360

Table 6.5
Calculating Clinic Capacity

Weeks in the year	52	Exam rooms	5
	×5	Exams/hour	× 2
Weekdays	260		10
Holidays	–10	Clinic hours/day	×8
Clinic days	250	Exams/day	80
Clinic days	250		
Exams/day	×80		
Clinic capacity	20,000		

Table 6.6
Estimating Volume

20X6 estimated volume	19,360
Annual growth rate	10%
Annual volume increment	1,936
20X7 initial budgeted volume	21,296

If no trend were apparent, one might set the volume budget at the level of visits experienced during the most recent 12-month period. This may be influenced by the overall goals and objectives of the organization or other factors such as competition, changes in technology, and altered demographics.

Dependent volumes. More complex is the situation involving a department whose volume of business is dependent on another department. Consider the clinical laboratories whose demand is created by nursing units, clinics, and so on. To prepare the volume budget for labs, it is necessary to establish or document these relationships and then project the budget for the laboratory based on the volume budgets of these other departments. As an example, consider the volume relationships shown in Table 6.7.

The volume budget for 20X4 could be 77,140 tests (20,300 patient days × 3.8 test for day) or 75,110 tests (20,300 patient days × 3.7 tests per day) depending on whether the most recent experience (20X3) or the three-year average was used. In reality, the volume budget for laboratory will be the sum of many pieces (chemistry, hematology, bacteriology, etc.), each of which is dependent on the volumes in a number of different areas (a variety of medical/surgical nursing units, special care units, clinics, etc.), each of which will have a slightly different relationship with the laboratories.

The top half of Table 6.8 shows the ratios of tests to patient days and clinic visits. Using this data, the bottom half of the table would be prepared. The number of tests is calculated by multiplying the number of applicable patient days and visits by the ratios of tests per patient day or visit. For example, the 22,410 tests chemistry will perform for pediatrics is a function of 12,450 patient days and 1.8 tests per patient day (22,410 = 12,450 × 1.8 = 22,410).

The volume budget for the laboratory is now complete. Because it was prepared in such detail, the impact of any change to the factors that drive volume (occupancy rates, the ratios of tests to patient days, clinic visit, etc.) can be understood. This is an example of how the "detailed plan" described

Table 6.7
Laboratory Tests by Year

Year	Patient Days	Lab Tests	Tests per Patient Day
20X1	19,500	72,150	3.7
20X2	20,000	72,000	3.6
20X3	19,900	75,620	3.8
Average	19,800	73,257	3.7
20X4	20,300		

Table 6.8
Laboratory Tests by Type of Laboratory and Location

Ratios of Laboratory Tests to Patient Day and to Visit

	2 North	2 South	Peds	ICU	Clinic 1	Clinic 2
Patient days/ visits budget	19,800	21,000	12,450	7,300	20,000	23,000
Laboratory						
Chemistry	2.5	2.3	1.8	5.6	1.0	2.0
Hematology	2.1	3.0	1.2	5.4	1.1	3.0
Bacteriology	2.8	1.9	1.0	3.7	1.5	0.5

Lab Test Budget by Lab and Location

	2 North	2 South	Peds	ICU	Clinic 1	Clinic 2	Total
Chemistry	49,500	48,300	22,410	40,880	20,000	46,000	227,090
Hematology	41,580	63,000	14,940	39,420	22,000	69,000	249,940
Bacteriology	55,440	39,900	12,450	27,010	30,000	11,500	176,300
Total	146,520	151,200	49,800	107,310	72,000	126,500	653,330

in the definition of a budget can help managers. It may take longer to develop the budget, but any deviation from the budget can more easily be understood and dealt with because of the detailed information about volume.

In a similar manner, a public health department can calculate a volume budget for immunizations by combining population data with targeted immunization rates. As seen in Table 6.9, the health department would need to perform 12,150 immunizations if it wished to immunize a population of 4.5 million people. The math is relatively straightforward, multiplying the population by the target immunization rate for each condition.

Table 6.9
City Health Department Immunization Volume Budget

	Targeted Immunization Rate	Immunizations
Flu	75.0%	3,375,000
MMR	90.0%	4,050,000
Pneumonia	65.0%	2,925,000
Shingles	40.0%	1,800,000
Total immunizations		12,150,000

And just as a laboratory budget can be prepared by lab and location, a health department service budget can be prepared in similar detail. Consider a health department that provides several services to a city population of just over a half million people. As shown in Table 6.10, by tying the ratio of services to the population, a detailed budget for volume by service can be developed. With this level of detail, deviations can be understood more easily.

While the mathematics of volume budgeting is relatively straightforward, other factors must be considered. Internally, the ability of the organization to deliver what the market needs and wants must be given careful consideration. Does the organization possess the requisite skills to provide a service? If not, can those skills be obtained? Further, does the organization want to recruit for those skills? Does a hospital with a growing geriatric population have the ability to provide the kind of medical services that the population needs? Does it have geriatric programs, geriatricians on staff, facilities suited to an older patient population, and so on? Can it obtain those resources? Is this a service line it wants to get into? Does a rural hospital, for instance, have what it takes to perform kidney transplants? Does it even want to be in the transplant business? And lacking the capacity to perform an appropriate number of transplants to assure quality outcomes, should it be in the transplant business? Lacking the resources, the organization will not be able to serve that population of patients. Similarly, does the organization have the capacity to capture the volume? If a hospital's clinics are already running at capacity, would they be able to accommodate one or more new clinic sessions and all of the associated demands? Might opening such a clinic actually cause volume to decline as the result of overcrowding and the associated patient dissatisfaction?

Science and technology. Advances such as new treatments, improved preventive measures, and better diagnostics can affect volume. Often,

Table 6.10
City Health Department Public Service Volume

Services per Capita by Neighborhood

Neighborhood	Southdale	Uptown	City Center	Northwood	Total
Population	189,000	92,300	36,000	200,000	517,300
Service 1	1.3	1.4	2.9	1.0	
Service 2	1.5	1.2	1.4	1.1	
Service 3	1.7	1.8	1.6	0.5	

Service Volume by Service and Neighborhood

Neighborhood	Southdale	Uptown	City Center	Northwood	Total
Service 1	245,700	129,220	104,400	200,000	679,320
Service 2	283,500	110,760	50,400	220,000	664,660
Service 3	321,300	166,140	57,600	100,000	645,040
	850,500	406,120	212,400	520,000	1,989,020

managers and providers are the first to know of these advances, and their input should be solicited as part of the preliminary discussions.

Population demographics. If the population is growing, for example, with young families with little children, it is highly likely that volume associated with pediatric care will grow. Similarly, if the prevalence of cardiac patients grows, cardiologist office visits will grow. Age, disease, patient mobility, income level, and similar demographic factors all play into the determination of business volume.

Market dynamics and competition. New providers entering the service area or new care models implemented by existing providers can drive volume to or from providers. A new physician practice offering more convenient office hours (being open until 9:00 p.m. while others close at 5:00 p.m.) might draw patients from the others. A more convenient location (e.g., laser eye correction clinic located in a popular shopping mall) might also result in more volume.

Geography. The physical location of facilities vis-à-vis where patients live can impact volume projections. Are patients likely to drive past a provider that is nearby to use one 20 miles distant? Does the road system make using a particular facility easier or more difficult? Does a hospital located in the downtown business district of a large city have a more difficult time attracting inpatient volume than a suburban one? For some

medical conditions, patients will travel great distances (organ transplants, world-class specialists, etc.), but for routine medical conditions, the convenience associated with geography often plays a part in where patients go for care.

Competition. The presence or absence of competitors in the market must be considered. Do they have a better reputation with which to draw patients and practitioners? Are they stronger financially and thus able to adapt to changing market conditions faster? Do they have other resources (newer facilities, better geographic location, more diverse physician base, etc.) that may be more attractive to patients? If there is no competition, is the market such that it is attractive to other providers, which might decide to establish a presence thus changing demand patterns? Is there sufficient potential patient volume to "go around"?

Timing. It refers to when things are done. When should a new service be offered? When is it time to modernize or change the way service is provided? Is it too soon to move into a new service or technology that is not yet mature? Would the organization gain competitive advantage by moving faster or earlier than other organizations? Establishing market dominance by moving earlier than the competition can assure access to patient volume that otherwise might not be available. When is the clinic open for business? Are the hours of operation too restrictive, too inconvenient for paying patients? Does a physician practice limit its potential volume by not having evening and weekend hours?

THE REVENUE BUDGET

Once the volume budget has been locked in, it is time to turn to the revenue budget. The basic formula for revenue calculations is units of service × price = revenue. In departments with more than one billable unit of service, multiplying each service by the applicable price and summing up the results produces the revenue budget. Consider, for example, a department with 10 billable units of service. Its revenue budget would be calculated as shown in Table 6.11 using the formula just listed.

For an entire hospital, the revenue budget would be the sum of all of the department revenue budgets. Table 6.12 shows a typical hospital revenue budget.

The final step in budgeting for revenue is converting gross revenue (the amounts billed) to net revenue (the amounts actually collected). This is done by multiplying the gross revenue amount by an overall collection rate or by breaking the revenue down by payer and applying payer-specific collection rates, as shown in Table 6.13.

Table 6.11
Departmental Revenue Budget

Revenue Items	Quantity	Price	Gross Revenue
Procedure #1	1,000	$100.00	$100,000
Procedure #2	2,000	150.00	300,000
Procedure #3	1,500	300.00	450,000
Procedure #4	500	50.00	25,000
Procedure #5	400	75.00	30,000
Procedure #6	200	100.00	20,000
Procedure #7	250	350.00	87,500
Procedure #8	300	1,000.00	300,000
Procedure #9	1,000	50.00	50,000
Procedure #10	600	100.00	60,000
Total			$1,422,500

Table 6.12
Hospital Revenue Budget

Revenue Center	Units of Service	Volume	Price	Gross Revenue
Adult Med/Surg—2 North	Patient days	10,250	$950.00	$9,737,500
Adult Med/Surg—3 North	Patient days	10,000	950.00	9,500,000
Adult Med/Surg—4 North	Patient days	9,850	950.00	9,357,500
Adult Med/Surg—2 South	Patient days	7,500	950.00	7,125,000
Adult Med/Surg—3 South	Patient days	7,250	950.00	6,887,500
Adult Med/Surg—4 South	Patient days	6,950	950.00	6,602,500
Pediatrics	Patient days	3,000	850.00	2,550,000
Surgical Intensive Care Unit	Patient days	4,400	3,200.00	14,080,000
Medical Intensive Care Unit	Patient days	4,500	2,500.00	11,250,000
Cardiac Care Unit	Patient days	4,000	3,300.00	13,200,000
Behavioral Health Unit	Patient days	3,000	650.00	1,950,000
Emergency Department	Visits	35,000	750.00	26,250,000
Outpatient Clinics	Visits	52,000	175.00	9,100,000
Operating Room	Minutes	790,000	25.00	19,750,000
Anesthesiology	Minutes	632,000	25.00	15,800,000
Medical Supplies (billable)	Cost + 10%			6,500,000
Pharmacy	Cost +10%			12,000,000
Clinical Laboratory	Tests	2,375,000	40.00	95,000,000
Blood Bank	500cc Units	6,000	150.00	900,000
Radiology	RVUs	795,000	30.00	23,850,000
Nuclear Medicine	RVUs	650,000	30.00	19,500,000
Respiratory Therapy	RVUs	251,000	20.00	5,020,000
Physical Therapy	RVUs	175,000	15.00	2,625,000
Occupational Therapy	Minutes	212,000	10.00	2,120,000
Total gross revenue				$330,655,000

Table 6.13
Converting Gross Revenue to Net Revenue

Using Payer-Specific Collection Rates

Payer	Gross Revenue	Collection Rate	Net Revenue
Payer #1	$33,065,500	50.0%	$16,532,750
Payer #2	82,663,750	65.0%	53,731,438
Payer #3	115,729,250	40.0%	46,291,700
Payer #4	33,065,500	80.0%	26,452,400
Payer #5	66,131,000	85.0%	56,211,350
Total	$330,655,000		$199,219,638

Using an Organizational Average Collection Rate

Gross revenue	$330,655,000
Collection rate	60.25%
Net revenue	$199,219,638

While either approach yields the same amount, the first approach using detailed collection rates by payer provides better information for management.

THE STAFFING BUDGET

Developing a budget for staffing involves planning for the types and numbers of people required, base salary levels, premium pays like shift differential or charge pay, performance or cost-of-living increases, and so on.

While guidelines can be used in determining staffing levels (e.g., one full-time technologist for every 100,000 laboratory tests), these differ from one unit to the next and from one institution to the next depending on patient acuity, equipment sophistication, work processes, and other factors. There are no hard and fast rules, but every profession has standards that can be helpful.

Several approaches can be used for determining staffing levels. One is to base it on average productivity per full-time equivalent worker (FTE). Another is to base the staff size on average work output per hour worked. Still another relies on an engineering approach based on each task performed.

Average productivity per FTE. This method establishes relationships between historic averages for work output and staff FTE levels. In Department A, for example, if each worker FTE can handle 500 visits, a total

workload of 1,250 visits would require a staff of 2.5 FTEs (1,250 ÷ 500 = 2.5). There is no need to adjust for vacation or sick time as the use of a "per FTE" productivity rate factors this in already. This simple math calculation requires a few challenge questions before the manager can be satisfied that the amount is proper and correct. Is the per FTE productivity amount reliable? Has the work associated with each visit changed in some way and become more or less involved? Is the type of visits different? Has the work process changed? Perhaps the most important question is, can a 0.5 FTE be hired? If not, the budget may need to be set at 3.0 FTEs and not the 2.5 as calculated.

Average productivity per hour. In this approach, average worker output per hour is used to determine the number of workers. But unlike the previous method, nonproductive time must be factored in. Consider the situation of Department B in which each worker can perform 60 tests per hour for a total of 480 tests per day. At that rate, such a worker might be expected to perform 124,800 tests in a year's time (480 tests per day × 5 days/week × 52 weeks = 124,800 or, alternatively, 60 tests per hour × 2,080 annual hours). But is that really the case? Will such a worker actually work that much? Probably not, given vacation days, sick days, holidays, and other such days off. Most workers enjoy a certain level of this sort of nonproductive time—time for which they are paid, but expected not to be at work.

As a result, the calculated number of workers must be grossed up (increased) to account for the nonproductive time. For Department B, the total annual test load is 2,121,600 tests. The initial calculation of staff needs would be 17 workers (2,121,600 ÷ 124,800 = 17). But that amount is insufficient to get the work done and must be adjusted to take into account nonproductive time. In this case, assume each worker is given 20 vacation days a year and 10 holidays and uses 9 sick days—a total of 39 days or 312 hours off with pay. The balance of the time, 1,768 hours (2,080 – 312), the worker is expected to be on the job and producing tests. This results in a payroll productivity rate of 85% (1,768 ÷ 2,080). By dividing the 17 FTEs by the productivity rate, it can be determined that 20 FTEs should be hired (17 ÷ 85% = 20). In this way, if the 20 FTEs are each given their time off, a sufficient number of workers will be present to get the work done.

Avoid the mistake of merely adding 15% of nonproductive time back to the 17 workers. As demonstrated in Table 6.14, doing so will short change the FTE count and leave a manager short staffed even before the fiscal year begins.

Table 6.14
Calculating FTE Needs

Proper Approach		**Improper Approach**
	17.00 FTEs	17.00 FTEs
	÷ 85% productivity rate	× 15% nonproductive rate
Correct FTE needs =	20.00 FTEs	2.55 FTEs
	– 19.55 FTEs	+ 17.00 FTEs
Staffing shortage =	0.45 FTEs	19.55 FTEs

In this case, the calculation on the right results in a nearly 2% shortfall in FTEs. This is because the 15% of nonproductive time is not 15% of 17.00 FTEs, but rather 15% of 20.00 FTE. But the 20 is not a known value at the start of the calculations. It must be determined by division using the productivity rate. This is reminiscent of the old grade school ratio problems such as "10 is to 20 as X is to 40, solve for X." Even those skilled in budget calculations often make the mistake of saying, "Let's add 15% for nonproductive time." But this approach is clearly incorrect and will always result in a budget that lacks sufficient staff.

To determine the actual productivity rate, managers can consult the payroll records. Divide the total worked hours (usually categorized as "regular hours") by the total paid hours. The resulting percentage is the productivity rate. Typically this rate would be in the neighborhood of 85%. If this rate is much lower, there is an issue of workers taking too much time off; if it is much higher, there is a risk of burning out workers because they have not taken enough time off to "recharge their batteries."

Engineered FTE calculations. For a far more precise and highly credible calculation of staffing needs, managers can build their staffing needs from scratch using the combination of anticipated volume and task and time analysis. Table 6.15 shows this approach.

The analysis begins with a comprehensive list of tasks that are routinely performed for each unit of service the department handles. These could be tasks like taking vital signs, writing a nursing note, and serving a meal tray. In the table, only 20 tasks are listed, but in the real world, this list could be longer or shorter depending on the department. Next, the appropriate amount of time expressed in minutes needed to perform each task is entered into Column A. Careful study and observation of worker movements can result is usable values. Before using them, however, they should be reviewed with staff to check the accuracy and see if any significant

Table 6.15
Department XYZ
Engineered FTE Calculations

Work Tasks Performed by Staff	Time to Complete (A)	Frequency Performed (B)	Total Task Time (C)	Units of Service Multiplier (D)	Total Time Required (E)
Task 1	10	20	200	10,000	2,000,000
Task 2	5	10	50	10,000	500,000
Task 3	15	5	75	10,000	750,000
Task 4	7	3	21	10,000	210,000
Task 5	3	2	6	10,000	60,000
Task 6	5	3	15	10,000	150,000
Task 7	10	5	50	10,000	500,000
Task 8	20	4	80	10,000	800,000
Task 9	40	1	40	10,000	400,000
Task 10	9	1	9	10,000	90,000
Task 11	11	1	11	10,000	110,000
Task 12	16	1	16	10,000	160,000
Task 13	20	1	20	10,000	200,000
Task 14	5	3	15	10,000	150,000
Task 15	10	3	30	10,000	300,000
Task 16	15	5	75	10,000	750,000
Task 17	7	1	7	10,000	70,000
Task 18	8	1	8	10,000	80,000
Task 19	3	2	6	10,000	60,000
Task 20	1	1	1	10,000	10,000

Total productive minutes	7,350,000
Total productive hours	122,500
Productivity rate	87.5%
Total paid hours	140,000
Total paid FTEs	67.31

tasks have been omitted. Column B contains the frequency with which each task is performed for each unit of service. If Task 8 is performed, for example, every six hours for an inpatient, that value, four, is entered. If Task 9 is performed only once, for instance at admission or discharge, a value of one would be entered.

The values in Column C are arrived at by multiplying the values in Column A by those in Column B. These represent the amount of time spent on each task for each unit of service. Following this, the amount of service volume is entered in Column D. This is the volume amount (patient days, clinic visits, procedures, etc.) that drives the work. Multiplying Column C by Column D and summing the total determines the total need for productive work time in minutes. In this example, that is 7,350,000 productive minutes of 122,500 productive hours. The hours are converted from productive to paid hours by dividing by the productivity rate, in this case 87.5%, yielding 140,000 total paid hours. If an FTE is worth 2,080 paid hours, Department XYZ will need 67.31 FTEs. If a 0.31 FTE cannot be achieved, the manager will need to decide if the calculated value should be rounded down to 67 FTEs or up to 68 FTEs.

This "engineered" approach provides maximum credibility. If finance does not want to fund the entire documented FTE need, the manager can move the discussion to which tasks can be omitted. That can shift the burden back to finance by demonstrating the consequences of its decisions.

The ongoing challenge for managers is to "make it work" in the budget year. Often, however, productive time is not really productive. Examples abound in health care: the well-paid and highly skilled OR nurse who is waiting for the next case to start; the physician who is ready to examine a patient, but the patient has not arrived yet; or the technician awaiting the arrival of a patient before starting the CT scan. Such examples represent "idle time," time spent waiting on patients, equipment, and so on. Workers are ready to work, but the work is not ready for the workers. This is an area managers need to focus on because of the significant financial burden—especially in an era of scarce resources. In 2013, a TeleTracking study identified millions of dollars associated with idle time and waste, both added cost and missed revenue.[1] In some cases, a second gross-up is required to account for idle time that a department cannot avoid. Consider an admitting office in which the process of admitting a patient takes one hour and which must admit 16 patients each day. Nominally it would require two clerks to do the work. But if the patients failed to show up until after noon, processing the same number of admissions would require four clerks. This is because for half of the day they are all idle. Dividing the two FTEs by 50% non-idle rate yields a need for four FTEs—unless and until the situation is remedied by an improvement in scheduled arrival times for patients.

Because health care is, essentially, a series of hand offs from one department or function to another (e.g., floor bed to surgery to recovery to surgical ICU to floor bed), it can be difficult for a single department to deal

with idle time. In such cases, it falls to organizational leadership to lead the effort to reduce idle time by investing in better coordination, communication, and management information.

Once the staffing calculations have been finalized, it is time to move on to the salary budget. Even with modern financial systems that are centrally managed by the finance department, it is useful for managers to develop a salary matrix of their own to maximize their understanding of their salary needs and, just as important, to verify that the central system has accurately allocated resources to the department. Using any of a number of different spreadsheet software programs, managers can develop this matrix by listing the position titles and names of incumbent workers vertically down the page and the categories of information about salaries (hourly pay rates, FTE values, etc.) horizontally across the page.

Figure 6.2 displays such a matrix that has been set up to run in a spreadsheet software program. It provides spaces for rank or type of employee (Column A) and the name of the incumbent (Column B). This ensures that no employee or labor category is inadvertently, and embarrassingly, omitted. The FTE value is provided for in Column C and is used later in the matrix as part of the individual salary calculations. A full-time person who works 2,080 hours (a full 40-hour week) per year is 1.0 FTE. A half-time employee works 1,040 hours and is expressed in the worksheet as 0.5 FTE. The current hourly pay rate (Column D) is included to establish an audit trail from the current time frame to the future. The next columns (E and F) provide a way to adjust the current hourly pay rate for any increase scheduled to take effect before the budget year begins. In this way, the budget calculations will begin with the pay rate in effect on the first day of the new fiscal year (Column G). Column H is the location for the base salary budget for each employee. It is the product of 2,080 hours

	A	B	C	D	E	F	G	H	I	J	K	L
1	Position	Incumbent Name	FTE Value	Current Pay Rate	Pay Raise Prior to Start of Budget Year		Budget Year Pay Rate	Base Salary	Pay Raise in Budget Year			Salary Budget
					Percent	Effective Date			Percent	Effective Months	Amount	
2												
3												
4												
5												
6												
7												
8												
9												
10												

Figure 6.2
A salary budget worksheet will pull together all types of wages for each employee.

and the data from Columns C and G. If no wage increases were planned during the budget year, the budget worksheet would stop at this point. However, since wages are usually adjusted for one or more reasons during the course of the budget year, columns are provided in the worksheet for an additional increase during the budget year. The total salary budget (Column L) is the sum of the salary shown in Column H and the amount of increase shown in Column K. Columns can be added to provide for a variety of additional budget information, including such premium payments as overtime, charge pay, shift differential, and on-call pay, that each employee could earn. If this information is not known for each individual employee, the information could be recorded on separate lines in the matrix.

The use of this matrix approach is shown in Figure 6.3, in which a departmental budget encompassing a manager and three types of workers is displayed. Note that workers are categorized by type first, with the names then listed along with current FTE values and current rate of pay in Columns A through D. This is the beginning of an audit trail leading from the day the budget work begins up to the new budget year and builds credibility that can be helpful during a budget review meeting. From that point forward, the calculations are relatively straightforward.

	A	B	C	D	E	F	G	H	I	J	K	L
1					Pay Raise Prior to Start of Budget Year				Pay Raise in Budget Year			
	Position	Incumbent Name	FTE Value	Current Pay Rate	Percent	Effective Date	Budget Year Pay Rate	Base Salary	Percent	Effective Months	Amount	Salary Budget
2	Manager	Smith	1.0	40.00	3.00%	1/1/XX	41.20	$85,696	3.00%	6	$1,285	$86,981
3												
4	Worker 1	Maranto	1.0	30.00	2.50%	2/1/XX	30.75	63,960	2.50%	5	666	64,626
5		Dawson	1.0	29.00	1.50%	3/1/XX	29.44	61,225	1.50%	4	306	61,531
6		Germann	1.0	31.00	2.00%	1/1/XX	31.62	65,770	2.00%	6	658	66,427
7		Burton	0.5	25.50	1.75%	5/1/XX	25.95	26,984	1.75%	2	79	27,063
8		Orlando	0.5	25.40	2.00%	4/1/XX	25.91	26,944	2.00%	3	135	27,079
9		Hampe	1.0	30.00	1.50%	6/1/XX	30.45	63,336	1.50%	1	79	63,415
10		Vacant	2.0	30.00		6/1/XX	30.00	124,800	1.50%	1	156	124,956
11		Total	7.0					433,019			2,079	435,097
12												
13	Worker 2	Steinwachs	1.0	20.00	1.75%	1/1/XX	20.35	42,328	1.75%	6	370	42,698
14		DeVivo	1.0	19.00	2.00%	1/1/XX	19.38	40,310	2.00%	6	403	40,714
15		Vacant	1.0	20.00	1.50%	6/1/XX	20.30	42,224	1.50%	1	53	42,277
16		Total	3.0					124,862			826	125,689
17												
18	Worker 3	Tressler	0.5	15.00	2.50%	1/1/XX	15.38	15,990	2.50%	6	200	16,190
19		Chairs	0.5	14.00	1.50%	1/1/XX	14.21	14,778	1.50%	6	111	14,889
20		MacKenzie	1.0	16.00	2.00%	1/1/XX	16.32	33,946	2.00%	6	339	34,285
21		Ford	1.0	10.50	1.75%	1/1/XX	10.68	22,222	1.75%	6	194	22,417
22		Schwartz	1.0	10.40	2.00%	1/1/XX	10.61	22,065	2.00%	6	221	22,285
23		Vacant	3.0	15.00	1.50%	6/1/XX	15.23	95,004	1.50%	1	119	95,123
24		Total	7.0					204,005			1,184	205,189
25												
26	Total		8.0					$ 847,582			$ 5,374	$ 852,956

Figure 6.3
A completed salary budget worksheet.

Column	Formula or Data Required
Column E	In this column, enter the planned percentage of pay increase for each worker. Each can be different if a performance-based system is used. If everyone received a predetermined general increase (perhaps as in the case of a union contract escalator), then a single amount is applied to all lines.
Column F	The effective date should be between the day of preparation and the start date of the budget year. If it is not between those two dates, it is not needed and the current amount would be entered directly into Column G (Budget Year Pay Rate). This is because no raise would be given prior to the start of the new budget year.
Column G	Rather than an amount or value, this column is used to enter a formula that will calculate the pay rate in effect at the start of the budget year. Using the line for Smith, the manager, the formula is (D2*E2)+D2 (where * is used for multiplication and / for division). This will result in the amount of the pay rate being displayed in the column.
Column H	Similarly, this column is populated with a formula (2,080*C2*G2) that results in the calculation of the base salary for the budget year.
Column I	In Column I, enter the planned percentage of pay increase for each worker. Again, as with Column E, the percentages can be the same for all workers or can differ from one worker to the next.
Column J	Enter the number of months in the budget year for which the raise will be in effect (the number of months from the date of the raise to the end of the year). For example, a raise on May 1 for a fiscal year that ends on June 30, enter 2 (May and June).
Column K	Just as a formula was entered in Column H, a formula is entered here as well. H2*I2*J2/12 will calculate the amount of salary increase applicable to the budget year. This amount will be smaller than the annual value since it represents only that part that must be covered in the budget year.
Column L	Finally, Column L represents the sum of the amounts that were automatically calculated in Columns H and K. This is the salary budget amount needed to cover the individual worker whose name appears in Column B.

As often as possible throughout the worksheet, enter formulas as opposed to values. For example, rather than enter $85,696 in Column H, line 2, take advantage of the power of the spreadsheet and enter a formula: 2,080*C2*G2. The spreadsheet will then multiply 2,080 hours by the value shown in cell C2 and then by the value shown in cell G2. In this way, formulas can be copied and used on other lines in the sheet. For example, for line 23, the same formula will return a value of 95,004 for cell H23. As the formula is copied down the sheet, the software automatically updates the line numbers. In addition, by using the cell containing the FTE value as part of the formula, the formula works with all FTE values. In this example, the formulas in Columns G, H, K, and L differ only in the line number. This takes advantage of the power of the spreadsheet, avoids having to write the formula on each line, and allows managers at a future point in time to play "what if?" scenarios with their budgeted requests.

Additional columns and rows can be added to account for such things as premium pay or overtime. If the amounts are knowable by individual (as might be the case, for example, with charge pay), a column can be used to account for the necessary budget. If only an amount is known with no specificity as to which workers are involved (overtime pay, for instance), a row can be used.

As displayed in Figure 6.3, the total salary budget need is for $852,956. In a budget review meeting, if this amount were not affordable and the manager was challenged to reduce it, the power of the spreadsheet can be harnessed merely by changing certain input variables. What if the number of vacant FTEs were reduced? By what amount would this reduce the budget request? And what impact will such a reduction have on departmental and organizational performance?

This may seem like a lot of detail and preparation work, especially in a department with perhaps 100 FTEs. In fact, a salary budget can be prepared with far less detailed information, but the information developed by using the spreadsheet will be valuable later on when comparing actual performance to the budget. As a rule, the more budget detail available, the easier it is to understand deviations and take appropriate management action. Simply stated, the more detail, the better.

If fringe benefits are to be included in the personnel budget at the department level, the calculation is usually a simple matter of adding a flat percentage to the salary dollars. The human resources department can provide the appropriate percentage, or it may be found in the budget guidelines.

SUPPLIES AND SERVICES BUDGET

An account-by-account work-up provides a good level of detail, but it is possible to budget down to the level of individual items such as antibiotics in the pharmacy's budget or surgical implants in the ORs. Figure 6.4 displays a spreadsheet approach to developing a supplies and services budget.

Data from an appropriate base period can be used to develop the budget. Typically, this will consist of four to six months of year-to-date values for the current fiscal year. This data is then "cleaned" to adjust for unusual items and then extrapolated based on time and volume to a full year amount. In the case of new programs for which base period data are not available, budgets can be developed via consultation with other institutions or "experts," reference to data for similar services, or estimation on an item-by-item basis.

First, the names of the expense accounts along with the amounts of spending in the base period being used are entered in Columns A and B. Next, the base units are entered in Column C. These represent the months associated with the spending of fixed expense items or the units of volume associated with variable expense items. Dividing the Column B values by the Column C values yields the amounts per month or unit of volume in Column D. Multiplying these by the budget year volume for the variable expenses and 12 months for the fixed ones yields the base budget amount. Inflation is added (Columns G and H) to take into account normal price increases developing during the budget year. Typically, inflation rates will be provided whether in the budget guidelines document or by staff in materials management or purchasing. The final budget amount is determined by combining the inflation amount (Column H) and the base budget amount (Column I). Figure 6.5 displays a completed spreadsheet. In this illustration, those expense items deemed to be fixed are marked with an (F) and the variable ones with a (V). The best person to determine

	A	B	C	D	E	F	G	H	I
1	Expense Account	Base Amount	Base Period Units	Amount per Unit/Month	Budgeted Units	Base Budget Amount	Inflation Rate	Inflation Amount	Budget Amount
2									
3									
4									
5									
6									
7									
8									
9									
10	Totals								

Figure 6.4
A worksheet for developing a budget for supplies and services.

	A	B	C	D	E	F	G	H	I
1	Expense Account	Base Amount	Base Period Units	Amount per Unit/Month	Budgeted Units	Base Budget Amount	Inflation Rate	Inflation Amount	Budget Amount
2	Office Supplies (F)	$25,000	5	$5,000.00	12	$60,000	10%	$6,000	$66,000
3	Medical Supplies (V)	180,000	9,000	20.00	21,900	438,000	10%	43,800	481,800
4	Solutions (V)	135,000	9,000	15.00	21,900	328,500	10%	32,850	361,350
5	Maintenance (F)	15,000	5	3,000.00	12	36,000	10%	3,600	39,600
6	Contract Sevices (F)	6,000	5	1,200.00	12	14,400	10%	1,440	15,840
7	Stock Drugs (V)	105,000	9,000	11.67	21,900	255,500	10%	25,550	281,050
8	Books and Periodicals (F)	5,000	5	1,000.00	12	12,000	10%	1,200	13,200
9	Miscellaneous (F)	10,000	5	2,000.00	12	24,000	10%	2,400	26,400
10	Totals	$481,000				$1,168,400		$116,840	$1,285,240

Figure 6.5
A completed supplies and services budget worksheet.

if an expense item is fixed or variable is the department manager—the person with the best sense of how the item behaves given a variety of business situations.

BASE PERIOD ADJUSTMENTS

Exercise caution when selecting data for the base period. Guard against situations that could invalidate the data and cause budget calculations to be inaccurate. An adjustment to the base period may be necessary before using it for budget calculations. Thus, it is important to examine the actual expenditure amounts in the base period. Make sure they are representative. This is particularly important with those accounts that are charged with an expense only once or twice a year. An example would be the maintenance expense shown in Figure 6.5. The budget was based on the assumption that the $15,000 was an amount representative of the five months in the base period. If this were not the case, and the $15,000 expense was incurred for the entire year, but paid in a single lump sum payment at the start of the fiscal year, the initial, pre-inflation budget of $36,000 would be overstated since only $15,000 would be necessary.

The following three situations can be particularly troublesome.

The unusual month. The base period may contain one or more months in which events occurred that are not likely to be repeated in the budget year. Start-up expenses, items billed and paid for once a year, one-time expenditures, and a one-time cost avoidance or credit are examples of financial events that could be reflected in the base period.

Normalization. Occasionally, a base period is selected that does not fully represent the current, ongoing operation. Perhaps the prior 12-month base period was absent the full effect of a new program that had added or reduced expenses on an ongoing basis. The base period may not include

staff who have yet to be brought on or other changes that will be instituted between the time the budget calculations are made and the new budget begins.

Seasonal patterns. Be careful in selecting the base period for any expense category that is affected by seasonal patterns. Utility costs, for example, are particularly vulnerable to seasonal highs and lows. Institutions that air-condition their facilities using electrical centrifugal chillers will have higher electric bills in the summer than in the winter. Use of a base period heavily weighted toward the summer months will result in too high an electricity budget. Conversely, the use of a base period heavily weighted toward the winter months will likely result in too low an electricity budget. Because resource needs should be budgeted as accurately as possible, accurate, representative base periods are essential. A calculation resulting in too high a budget is just as bad as one resulting in too low a budget. In both cases resource allocation decisions elsewhere in the organization are influenced by the erroneous calculations. Consider the effect on an institution that overestimates its utility budget by $2 million. Elsewhere in the institution, a needed program may be deferred because sufficient budget resources are not available. Then, months into the budget, when actual utility use is running well below budget and the error becomes apparent, it may be too late to implement the new program. Competitive advantage and market position may be adversely affected.

NOTE

1. "Executive Briefing: The Value of Time in Healthcare," TeleTracking Technologies Inc., 2013.

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Chapter 7

THE CAPITAL BUDGET

Capital budgeting, which includes equipment and facility renovations, customarily takes place as part of the annual budgeting process. It involves integration of the short-term and long-term operating needs of the organization with regard to equipment acquisition and renovations. By considering the goals and objectives in the annual plan and the three-to-five year business plan, resources are not consumed in acquiring equipment that is not consistent with these objectives. By definition, equipment dealt with in this budget has an acquisition cost in excess of a stated dollar amount (perhaps $1,000—as determined by each organization) and has a life of more than one year. The cost of this equipment is not charged to an expense account. It is carried on the balance sheet and depreciated over the course of its life.

CAPITAL ACQUISITION

The acquisition of capital equipment and renovation projects should occur via one of three possible methods: as part of the annual plan, as part of a multi-year or strategic capital plan, or as a response to a developing business opportunity.

Part of the annual plan. This is the normal approach to capital equipment budgeting for new items, replacement equipment for older, worn-out pieces or pieces that have become technologically obsolescent, and renovations to the physical plant. Renovations can result from a need to refresh cosmetically or modernize space, improve functionality, or provide for a new or expanded function. Acquisitions and renovations made as part of the annual plan must be consistent with the organization's strategic plan. If the strategic plan envisions the replacement of monitoring systems throughout the critical care units in 20X3 and 20X4 with Brand

A equipment, the short-term goal must support that. In 20X2, it would not be prudent to acquire monitors that are incompatible with Brand A. Whatever actions are taken in the short term must be complementary and supportive of the long-term plan.

Typically, a capital equipment budget begins with establishing at the highest level of the organization a "not to exceed" amount and the challenge is to fit as much equipment into that total as is possible. It means that all the requests are unlikely to be approved. Some will be funded, some will be deferred to the following year, and some will be rejected.

Part of a multi-year plan. Certain pieces of high-cost, high-technology equipment lend themselves to a longer-range approach. Typically these included pieces of equipment for radiology, the laboratory, and the IT departments.

Table 7.1 displays a capital equipment budget that integrates the short- and long-term thinking necessary to budget successfully. Note that the first call on dollars goes to scheduled replacements. Rather than replace

Table 7.1
Strategic Equipment Plan

XYZ Healthcare Company

Strategic Capital Equipment Budget

Description	**Year 1 ($000s)**	**Year 2 ($000s)**	**Year 3 ($000s)**	**Year 4 ($000s)**	**Year 5 ($000s)**
Programmed replacements	$483	$550	$600	$650	$1,700
Minor equipment (<$50,000)	407	450	500	550	1,600
Major equipment (>$50,000)					
Unspecified		3,500	3,750	4,000	5,250
ICU monitoring—nursing	1,195				
Laser—ophthalmology	125				
Kitchen equipment	65				
Cardiac cath lab	1,875				
Surveillance system—security	188				
Contingency	150	200	250	300	350
Imaging center					
Multi-year replacement plan	3,237	3,500	1,250	9,125	2,900
Funding set aside	275	600	3,350	–4,225	
Total	$8,000	$8,800	$9,700	$10,400	$11,800

all of the anesthesia machines in 20X1, all the dialysis machines in 20X2, the ventilators in 20X3, and so on, a predetermined number of each are replaced every year as part of an ongoing renewal program. Next come minor acquisitions, those costing less than an organization-specific amount—in this case, $50,000. Major acquisitions, costing more than the organization-specific amount, are listed on an item-by-item basis. These are followed by a small amount of contingency dollars to allow some latitude to the organization's leadership in taking advantage of developing opportunities that may not wait for next year's budget or to provide "insurance" in the event that a piece of equipment must be replaced on an emergency basis.

Last in this example, a department with high-priced equipment needs, radiology, is listed. Two lines are used. The first indicates the amounts needed in each of the five years covered by the plan. The second indicates that over the first three years of the plan funds will be set aside to ensure that enough cash will be available in year four, when the largest single-year outlay (greater than the entire year's budget) is scheduled. In this way, the excess funds that otherwise might be spent in year one, two, and three are safeguarded, there are no surprises in 20X4, and all necessary equipment can be acquired.

It should be noted that while major modifications to existing buildings or the construction of new ones should also be considered in the context of long-term planning, they are usually not included in the strategic capital equipment plan, but rather in a separate plan that receives separate board scrutiny. This is because such projects typically involve significantly larger sums of money than do minor renovation projects and require additional up-front work such as financial and regulatory feasibility studies, certificate of need acquisition in certain cases, and architectural and engineering studies. A separate facility redevelopment budget may be used for these major projects.

Response to a business opportunity. Occasionally, an opportunity arises outside the normal planning process. This usually takes the form of an opportunity to improve financial performance by lowering the cost of operations or increasing the ability to generate and collect revenue. Examples include pieces of equipment that reduce labor and supply costs (automated equipment that saves worker time and effort) or that provide additional capacity to treat patients (a new scheduling system that increases the number of patient visits to a clinic). In addition, the opportunity to acquire a major piece of equipment at a substantially reduced price occasionally presents itself. This, too, would be included in this business opportunity category.

THE QUESTIONING TECHNIQUE

The acquisition of equipment or the renovation of the physical plant involves the commitment of large sums of money—a resource that hospitals, nursing homes, and other health care providers are finding to be in scarce supply. Consequently, it is important that every piece of equipment and every renovation represent the best possible choice. One way to increase the likelihood of this is to ask questions, many questions, in order to develop as much understanding and factual information as possible as part of the decision-making process.

At the department level, where the request for a piece of equipment or a renovation is most likely to originate, questions should focus on the following: the effect on volume (additions, reductions, or substitutions); the likely changes to revenue and collections (payment caps like global budgets and experimental technologies must be taken into account); the impact on operating costs (more or fewer staff, changes in supply type and costs, maintenance requirements, etc.); and the profile of installation costs (special electrical requirements, possible modifications to the heating, venting, and air conditioning (HVAC) system, etc.). A more detailed list of questions to be considered as part of the original decision and justification process at the department level is presented in Table 7.2.

Questions should also be asked regarding the availability of the equipment and any supportive pieces, along with the amount of lead time to build into an acquisition schedule. Delivery and installation should be dovetailed with the schedule of any associated renovations in order to avoid the delivery of equipment before its physical environment is prepared. Depending on the particular piece of equipment, it is possible that significant cost could be incurred for storage while construction progresses. It is also possible that the unavailability of a particular brand in time to meet a program deadline could result in a decision to pursue a different manufacturer's offering. A number of questions need to be asked throughout the process. Will the equipment, system, or renovation "work"? Are the projections and assumptions about cost and revenue performance sound? Does the new piece of equipment or technology represent a genuine improvement or simply the latest fad; merely the addition of a few "bells and whistles"? Can the organization afford not to proceed with acquisition? What are the intangibles (image, marketability, mission, etc.) that can influence the decision-making process? Occasionally, the decision to proceed may rest on the answer to one or more of these questions.

Table 7.2
Questions in Search of Answers

Volume questions
• What is the effect on units of service volume? • Will additional units of volume be generated? • Will volume be reduced? • Will there be increases in some and decreases in others? • Will volume change in departments other than the one requesting the equipment or renovations? • Will incremental volume attributable to the new equipment exceed the department's capacity?
Revenue and collections questions
• What is the effect of the change in volume on gross revenue? Inpatient revenue? Outpatient revenue? Ancillary revenue? • What changes will there be to revenues in departments other than the requesting department? • How much of any incremental revenue will be collected? • What effect will reimbursement methodologies such as global budgets or case-based reimbursement have on revenues and collections? • Will prices be modified because of the change in volume? • Will prices be increased to afford the requested acquisition? • How much of any incremental revenue will be realized in a cost reimbursement environment? In a rate-controlled environment? • Will the new equipment improve the collection of revenue? • Will any incremental revenue be deemed to be "experimental" by third-party payers? If not covered by insurance, at what rate will incremental revenues be collected?
Operating cost questions
• What additions, reductions, or changes to the staff complement will be needed to support the new piece of equipment? • What kinds of skills must incremental staff possess? • Are staff available internally or must they be recruited from outside the organization? • Will labor market shortages compromise the ability to recruit staff? • Must staff be specially trained? If so, on-site or at a remote location? • If a reduction in staff is involved because of an equipment-related productivity issue, will attrition or a layoff be used to reduce the workforce? • In a unionized environment, what will be the effect of contractually guaranteed "bumping" rights (for staff reductions) and with the promotional bid system (for staff additions)?

(*continued*)

Table 7.2 (*continued*)

• If a layoff "bump" is involved, what will be the likely effect on other departments?
• Do supply costs increase, decrease, or remain the same?
• Who will maintain the equipment?
• Are replacement and maintenance parts readily available?
Infrastructure questions
• How easy is it to install the requested equipment?
• Will the mechanical, electrical, plumbing, HVAC, and other facility infrastructure components support it?
• Is sufficient space available?
• What will installation cost?
• Is the staff sophisticated enough to use the equipment to its full potential?
• Are there any staff behaviors that may influence the decision?
Broad organizational questions
• Does the requested equipment fit the mission of the organization?
• Does it create new or expand existing market opportunities?
• Is it consistent with the strategic plan?
• Does it demonstrate improved quality and/or patient safety?
• Does it fill a gap in the care continuum?
• Are the financial and business projections sound?
• Does this represent good science?
• Is the new equipment better than what it is replacing?
• Can the organization afford not to acquire this equipment?
• What value does the new equipment add to the organization and its staff and patients?
• What are the clinical, operational, and financial impacts?

Sometimes, asking the tough questions can be difficult. Often they appear to challenge authority, but they must be asked. Prefacing the questions, as described previously, with a phrase such as "Let me play devil's advocate" can shift the onus from the one asking the questions to an unnamed third party.

Finally, at the top of the organization, there should be a post-acquisition review to see how the decision process can be improved in the future. In addition, reviewing the information provided by the requesting party as part of the decision process can be helpful in learning which requesters are believable and which are not. This closes the loop in the process

of planning, implementing, and assessing. In this capital "postmortem," questions should center on the assessment of the process. Were the original assumptions correct? Did the projected volume materialize? Were the various financial analyses sound? Could anything have been done better? Where could improvements have been made? Last, the most difficult question to ask is, where did the decision process go wrong and how can that be remedied? It is also important to understand the positive aspects of the process and repeat them in subsequent years.

By following up after the fact, it is possible to learn from the mistakes of the past and avoid them in the future. Mistakes can be a valuable learning tool but only if people learn from them.

CAPITAL BUDGET REVIEW COMMITTEE

Many institutions use a committee structure to review all requests for equipment and renovations. Separate committees may review equipment and renovations, or a single committee may review both. The committees can be standing with members appointed for rotating, multi-year terms to assure continuity, or they can be set up on an ad hoc basis each year. Regardless, this group reviews each request and attempts to match available resources with departmental requests. But this is more than a simple matching exercise. The committee reviews each request to determine the level of need, the "fit" of the request compared to the departmental and organizational objectives, applicability to the capital budget (some requests should more appropriately be charged to the operating budget), and, finally, a sense of funding priority (at a minimum, an A/B/C categorization).

Giving the committee the charge to shape the final list is a significant delegation from the top of the organization. The committee members often must deal with organizational politics. They put in a lot of time and effort to get the job done right, to make the best possible recommendations, and to balance everyone's needs and wants with the organization's available funds. Given their level of commitment, it is not prudent to alter their recommended list. For example, if they provide a list that totals $8 million for an $8 million budget, it would not be prudent for the CEO to undermine their work by changing the items on the list, adding some and deleting others. Such action would demoralize the members and they would be less likely to put in the hard work the next year. If the CEO wants to make some modifications to the list, it would be better to give the committee a target of $7 million, thereby holding $1 million as a CEO reserve. Then the CEO can add items without undoing the efforts of the committee.

The budgeting process begins with a departmental request. It then proceeds to review by the committee. If a decision is made to approve the request, a recommendation will be made to the leadership of the organization. Finally, approval is sought from the governing board. This can be seen more clearly by referring to Figure 7.1, which highlights the process of approval.

Decisions are usually based on a review of information supplied by the requesting department and the knowledge of the organization that the committee members bring with them to the review process.

While the structure of the review committee or committees differs from organization to organization, one thing is certain: its membership should

Figure 7.1
A multidisciplinary Capital Review Committee best serves the capital budgeting process.

be broad based and include, at a minimum, a representative of administration, finance, nursing, the medical staff, engineering, and materials management. It should be large enough so there are enough hands to get the job done but not so large as to be ineffective. Every discipline need not be represented. Rather, internal "consultants" can be used for certain pieces or classes of equipment. The committee should be charged with the responsibility to review all requests and the authority to reject those that it feels are not deserving of funding via the capital budget. This committee, too, should ask the "tough" questions and should complete the process with a follow-up to determine what aspects of its review should be strengthened, modified, or eliminated in future years.

THE REVIEW PROCESS

While each piece of equipment requested by the various departments is likely to be different, all will possess certain attributes that can be used by the review committee to facilitate the decision-making process. These attributes include the following:

1. The sphere of use
    a. Direct patient care
    b. Indirect patient care
    c. Administrative
2. Financial effect
    a. Cost improvement
    b. Revenue enhancement
3. Service effect
    a. Replacement
    b. Service expansion
    c. Quality or service improvement
    d. New service

Knowledge of these attributes is helpful in determining priorities for funding, especially when the demand for available budget dollars exceeds supply. Given limited resources, a review committee might opt to fund only replacement or patient care items. Equipment requested to support a new service that has been approved in the operating budget might receive automatic approval.

Remember that, in essence, this is a competitive environment. Each department is competing against all the others for limited resource dollars. Thus, the justification accompanying each request is important to the decision-making process. This information "sells" the review committee and convinces it that this request, more so than many others, is deserving of inclusion in the budget. Consequently, the justification must present the most compelling reasons to allocate scarce resources.

Of all the information provided in the justification, the most important may be the financial information: marginal profit and loss analysis, return on investment analysis, benefit/cost ratio, and the like. Chapter 11 describes these decision-making and investment analysis techniques.

PACKAGING THE REQUEST

Many organizations use a multiform request procedure to collect detailed information about each piece of equipment requested as well as a departmental summary of requests. The basic equipment request form varies from one place to the next, but the information it seeks to collect is standard to all organizations and includes the following:

1. Requesting department
2. Cost center or department number
3. Location
4. Requested by
5. Priority (as compared to the other department requests)
6. Quantity
7. Model number
8. Equipment description
9. Unit cost
10. Sphere of use
11. Financial effect
12. Service effect
13. Operating budget needs
    a. Staff
    b. Supplies
    c. Training and orientation
    d. Routine maintenance
    e. Other

14. Manufacturer (including contact information)
15. Equipment evaluation (yes/no—if yes, by whom and when)
16. Periodic maintenance (yes/no—if yes, in house or vendor)
17. Installation requirements
    a. Electrical
    b. Mechanical
    c. HVAC
    d. Plumbing
    e. Carpentry
    f. Other
18. Special installation requirements (e.g., electromagnetic screening)
19. Replacement (yes/no—if yes, information about the item to be replaced)
20. Justification

A separate form may summarize all equipment requests for each department. It can be thought of as a cover sheet or transmittal form from the department to the review committee. Such a form would likely resemble the form displayed in Figure 7.2. These documents are then sent to the review committee in accordance with a predetermined budget timetable.

Summary of Department Equipment Requests

Requesting Department: _____ Departmental Contact: _____

			Equipment Type		Financial Impact		Service Impact					
Priority	Item	Description	Patient Care	Administrative Operational	Cost Improvement	Revenue Enhancement	Replacement	Service Expansion	New Service	Quality Patient Safety Enhancement	Cost	Expected Acquisition Date

Figure 7.2
A typical summary sheet for departmental equipment requests.

JUSTIFYING THE REQUEST

Justification for an equipment request is similar in some ways to the presentation of evidence at a trial. Just as the prosecutor tries to convince a jury to convict someone, the requesting party must present evidence that its equipment is worth acquiring. This requires a two-pronged approach: an objective case and a subjective case. The objective case is made by thoroughly describing the clinical, operational, and financial impacts the equipment will have on the organization, its patients, and those who work for it. The description of the clinical impact should focus on the outcomes to be achieved, quality of care and patient safety issues, patient throughput, and changes in satisfaction levels among patients and their friends and family members and any other changes, hopefully improvements, associated with clinical care either in the requester's department or elsewhere throughout the organization. Operationally, describe how the new equipment will improve operating efficiency, data-gathering accuracy, timeliness, productivity, physical appearance, the patient experience, and so on. Again, this description should address the requester's department as well as the rest of the organization. Finally, the financial impact should be documented with accurate and comprehensive analyses. Marginal profit and loss analysis can be used to describe the impact on revenues, expenses, and profits. Benefit/cost analysis can demonstrate the soundness of an equipment investment, and breakeven analysis can help provide a sense of comfort if there is concern that sufficient volume of business may not materialize to justify the acquisition. A simple calculation of return on investment (ROI) can, by itself, make the case. All of these analytic methods are explained in Chapter 11. Remember to "cast a wide net" in pulling together the description of the various impacts. Since no department acts in isolation, remember to contact the other departments and solicit their input. What impact will this equipment have on their clinical performance, their day-to-day operations, and their financials? Include all of this objective information in the justification.

While sound decision making is grounded on hard, accurate data, the willingness to make decisions often can be influenced by the softer side—the subjective arguments that a requester can make. To continue the courthouse analogy, this is quite similar to the summation the prosecutor makes to the jury—light on evidence and heavy on emotion. This is where the requester answers three important questions. How much will this improve things? Why is it so important? Why should resources be devoted to this request (as opposed to another one)? This is where passion

comes into play. This is where the requester should write or present the compelling arguments that "sways the jury" and win the day. It is here that anecdotes and vignettes are so important because they flavor the conversation. They touch on the emotion of decision making. They illustrate and balance the more objective points that have been made. It is one thing to speak objectively to the improved outcomes that may result from Technology X, but something else entirely to illustrate the impact it will have on "Little Billy" or how it will transform the life of someone's grandmother. Even using photographs of "Little Billy" gleaned from the Internet can be helpful in developing these emotional arguments.

SELECTION PROCESS

The selection of make and model often depends on the equipment or systems already present in a department. New infusion pumps must be compatible with existing ones. Additions to monitoring systems should be of the same make as the system already in place.

Sometimes, the manufacturer can be predetermined, but the model or size has not yet been determined. On other occasions, nothing is predetermined. In selecting an automated chemistry analyzer, for instance, there may be no predisposition to make or model, no reason to require compatibility. In a situation like this, effort must be placed on selecting the "right" piece of equipment. The following step-by-step approach is vital to achieving success.

1. Begin with the development of a detailed, objective set of specifications outlining what is expected of the equipment. This includes specifications and expectations not only for the equipment but also for its environment, cost performance, personnel impact, and so on. An acquisition cost target should be included.
2. A review of the literature (trade publications, professional journals, and sales brochures) will facilitate the development of a list of potential vendors and pieces of equipment for further consideration.
3. A detailed comparison of product features with the predetermined specifications should serve to trim the list of potential candidates. Only those pieces of equipment that meet all, or substantially all, of the specifications should remain in the running.
4. Site visits to see similar products in operation in a similar environment (same size operation, same operating constraints and challenges, etc.) should be arranged. In many cases, equipment manufacturers will assist with this. In addition, interviews with current users and with colleagues

at other institutions can be most helpful. Do not forget the actual workers who will use the equipment; one or two of them should be included on the site visit team.

5. An in-house demonstration or trial can sometimes be arranged. This is one of the best methods of determining if a product will "work" in the organization. Product acceptance can be tied to meeting certain performance criteria (number of tests per hour, etc.) as a way of guaranteeing that the equipment meets the organization's specific needs and that the manufacturer's claims are legitimate.

Remember to buy only what is truly needed. Do not consume scarce resources by acquiring the latest "bells and whistles" that may never be used. Remember to buy what is necessary, not what the salesman wants to sell.

Finally, consistency in the decision process is a virtue. Looking at the same kind of data, using analysis consistently, and asking the same questions in evaluation requests allow all to know how best to prepare the submissions. The capital budget and the operating budget should be thoroughly integrated so that the staff and supplies needed to operate a piece of equipment acquired in the capital budget are provided for in the operating budget. In the same way, any new staff member provided for via the operating budget should have the equipment he or she needs via the capital budget.

How embarrassing would it be to acquire a new scanner only to find that the radiology department's expense budget provided no staff to operate it? While integration of these budgets may seem simple, occasionally they are prepared separately with separate timetables. Two different members of the executive team (e.g., the CFO and COO) may oversee the different budgets, and this, too, can make integration difficult. It is also important to make sure that the items in the capital budget complement and support each other. Including new carpet in the main hallways of the hospital but omitting the necessary carpet cleaning equipment to maintain it would not be wise.

MAKING BALANCED DECISIONS

Whether equipment decisions are made by a committee, by the CEO or COO, or by the broader executive team, it is important that they be balanced. Both the clinical imperative and the business reality need to be taken into consideration as decisions are made. This can be done by combining a financial measure such as the benefit/cost ratio with achievement of the clinical and operational objectives. One way to do this is to use a subjective ranking system for consistency with the clinical and operational objectives combined with the very objective benefit/cost ratio ranking of each request.

Ranking consistency with the clinical and operational objectives can be done using a nominal group technique or a Delphi method that can achieve consensus. Unanimity is not needed and, in fact, it may not be achievable. A general consensus is sufficient. Rank each item for its consistency with the organization's objectives on a five-point Likert scale:

1. Extremely inconsistent
2. Inconsistent
3. Neither consistent nor inconsistent
4. Consistent
5. Extremely consistent

After a couple of iterations, general consensus should be achieved. While this is a subjective evaluation, the iterations and the fact that it concludes with a consensus decision make it a valid approach. The benefit/cost ratio, on the other hand, is an objective evaluation. Using the two evaluation rankings can lead to a decision that properly considers the clinical imperative and the business reality.

As displayed in Figure 7.3, a grid can be developed on which to plot the evaluations using the vertical axis for the subjective evaluation and the horizontal evaluation.

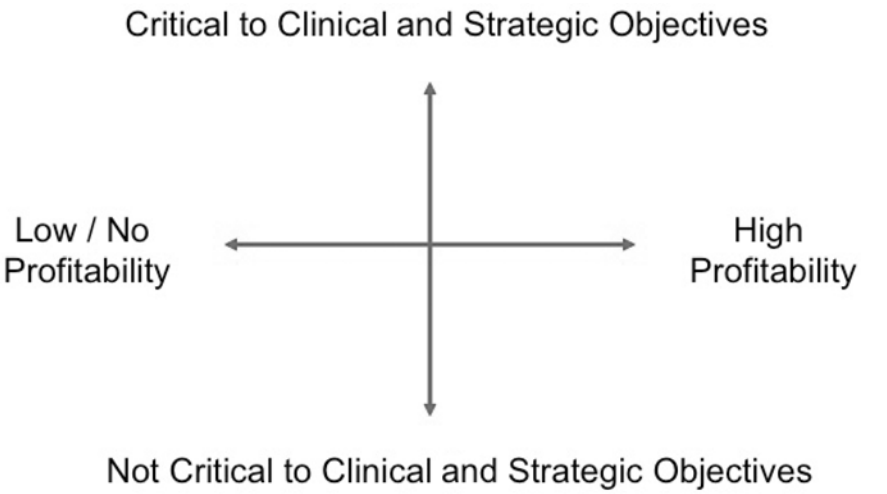

Figure 7.3
An equipment decision grid displays options in one of four quadrants based on their strategic and financial characteristics.

Table 7.3
Equipment Decision Scores

Equipment Item	Consistency with Objectives	Benefit/Cost Ratio
Item A	5	1.56
Item B	4	1.43
Item C	5	0.88
Item D	3	0.95
Item E	1	0.86
Item F	1	0.77
Item G	2	1.25
Item H	2	1.08

Note: A benefit/cost ratio greater than 1.00 indicates positive profit performance. A ratio less than 1.00 indicates negative performance.

The various items being considered can be plotted using the two evaluation ratings just as the grid coordinates are used on a road map to find points of interest. Those items that are more consistent with the objectives are in the top half and the ones less consistent go in the bottom half. Similarly, the ones with a high benefit/cost ratio goon the right side of the vertical dividing line, while those with low benefit/cost rations go on the left. Consider the eight items shown in Table 7.3 that are being reviewed for possible inclusion in the coming year's capital budget. The committee has performed a subjective evaluation that has provided a consistency score. The committee's finance representative has performed the necessary benefit/cost analysis to provide each of the eight items with a finance score.

Figure 7.4 displays the plot of these items on the equipment decision grid. Note that Items A and Item B are in the upper right quadrant because they have both high consistency scores and high benefit/cost scores. At the other extreme, Item E and Item F have low consistency scores and their benefit/cost scores are less than 1.00.

This approach does not tell which items to buy or not buy. Rather, it provides a construct that can help the decision-making process when there are not sufficient resources to accommodate all requests. The decision makers may decide to acquire Items A and B because of their scores. Then, they may decide to pursue Items G and H, which have lower consistency scores but are profitable. Then, the profits could be used to acquire Items C and D, which are not profitable, but are consistent. The point is this approach provides context for decision making as opposed to a decision. It gives those making the decisions valuable insight into the two critical performance issues.

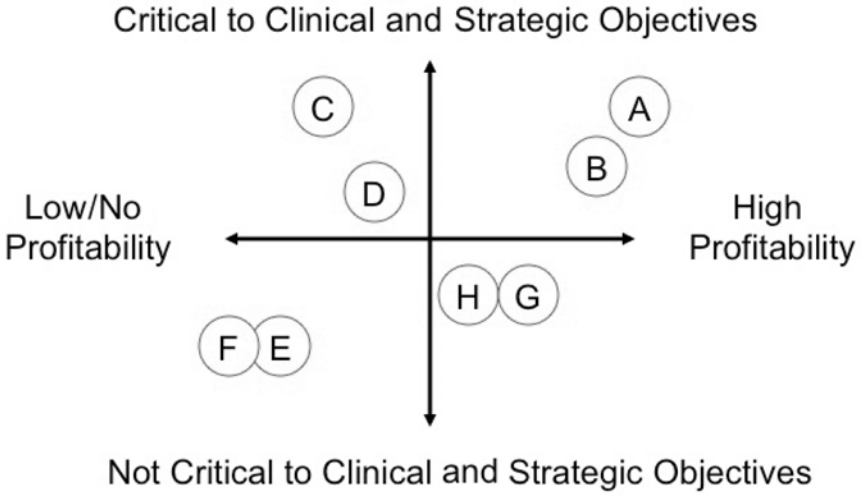

Figure 7.4
Eight potential acquisitions have been arrayed on this equipment decision grid.

SOURCES OF FUNDS

Once the decision to proceed has been made, the issue of paying for the acquisition must be addressed. A source of funds must be identified. In some cases, only the staff in the finance department can identify the funds (e.g., leasing or borrowing), while in other cases, the department leadership may be better suited to this task (e.g., obtaining a grant). The following are sources of funds that organizations can consider to support capital equipment acquisitions.

Retained earnings. The historic financial strength of an organization is reflected in its earnings over time. In the for-profit world, these profits accumulate as retained earnings, profits (earnings) that are retained in the company over time. This accumulated financial strength can be the basis of acquiring equipment. It is the source of the annual capital budget's "not to exceed" amount.

Cash from operations. Every business generates cash from its day-to-day operations. The amount of cash generally exceeds the bottom-line profit and can be roughly estimated by adding back the depreciation expense used to determine the profit amount. Table 7.4 demonstrates this by first recalculating the profit without using depreciation expense and then via a simplified estimation approach.

Table 7.4
Estimating Cash from Operations

	Profit as Reported	Cash Only Profit
Revenue	$4,000,000	$4,000,000
Salaries	$2,500,000	$2,500,000
Benefits	500,000	500,000
Supplies	800,000	800,000
Services	100,000	100,000
Depreciation	50,000	
Interest	10,000	10,000
Total	$3,960,000	$3,910,000
Profit or (loss)	$40,000	$90,000
Simplified approach		
Profit or (loss)	$40,000	
Add back depreciation	50,000	
Cash from operations	$90,000	

Cash from the investment itself. Some pieces of equipment generate profits and cash so quickly that they can repay the original investment within just a few months. Holter monitors, for example, can pay back the original investment before the fiscal year in which they are acquired ends, thus recycling the budget funds for other equipment. While not all equipment work this way, it is possible to take advantage of this phenomenon from time to time.

Philanthropy and endowments. Gifts from grateful patients and other benefactors represent a major source of funds to support equipment acquisition. These gifts come in several categories. General, unrestricted philanthropic gifts may be used at the discretion of the recipient. They can be used for equipment purchases, facility renovations, and so on and for any service or department. Restricted gifts may be used only for the purpose intended and specified by the donor. Monies thus received may, for example, be restricted to the purchase of a specific lab instrument or for the renovations associated with labor and delivery. They may be restricted to use by a named individual, a scientist or department head. Or, they may be restricted for use in a specified service line or department.

An endowment is a gift that cannot actually be spent. It is intended to provide a fund (called the corpus) that will provide an income stream that,

in turn, can be used for a specified purpose. Many people are familiar with these, having heard of an endowed professorship at a university. Endowments, however, can also provide general support for an organization or a department within a large organization. In some cases, individuals are solicited to donate to a particular endowment fund which will be used for general support for the organization. Another way in which an endowment fund can provide support is that the organization may be allowed to borrow from its endowment fund. The interest paid is considered a source of income to the fund. In a sense, the interest payments are "kept in the family." While many think that philanthropy is only for the wealthy, the reality is that the majority of the funds associated with charitable giving are the small donations ($10, $50, $100, etc. made by "regular" folks who are passionate about one thing or another and wish to provide some financial support.

Grant funds. Grants represent another potential source of funds. These can be from the government (federal, state, and local political jurisdictions) or from private foundations like the Bill and Melinda Gates Foundation. Generally, they are quite specific as to their use and carry more restrictions than generalized philanthropy. A federal grant, for example, may limit the coverage of individual researchers—either limiting the total amount of salary they will pay or limiting the percentage of effort they will support. And unlike generalized philanthropy, grants carry specific accounting and reporting requirements. Some grants are competitively awarded. Applications for National Institutes of Health grants are peer reviewed and given a funding priority score. Funding cuts off after a certain priority score is reached. Other federal agencies also provide funds for projects that align with their basic missions. Similarly, state and local governments may be a source of funding, albeit in smaller monetary amounts.

Finally, private foundations can be approached to provide funding. The request must be in line with the foundation's stated aims (AIDS research, children's health, etc.) and meet certain application requirements. The website of a specific foundation will provide the right information for applying. It is also possible to search the web to find foundations that have an interest in a specific area of health care or research.

Manufacturer financing. When it comes to acquiring equipment, manufacturers can provide a variety of options from an outright donation of small pieces of equipment to debt financing. Most manufacturers have a financing arm, which can lend money at competitive rates to organizations to use the cash to purchase equipment from the company. This is quite similar to buying a car and financing it through Ford Motor Credit or

GMAC Financing instead of a bank. In this way, the manufacturer reaps all the rewards (profits from the sale as well as profits from the financing) and may be induced to lower the purchase price. It may also be easier to borrow from a manufacturer than from a bank, depending on the financial condition of the acquiring organization.

Depending on the product development needs of an equipment developer, there may be a willingness to enter into a joint venture with a provider organization and in so doing make it possible for a financially challenged provider to get the very latest (sometimes referred to as the "bleeding edge") technology. The provider wants a new technology and the developer needs a site to test the technology. The provider offers its site and the developer provides the equipment either at no cost or at a significantly reduced cost. Both parties benefit from the arrangement. It is not for all, but it has potential for some organizations.

Vendors are also willing to provide equipment as part of what is commonly called a reagent rental contract. In this arrangement, the provider organization agrees to purchase a specific quantity of reagents at a price that is guaranteed over the multi-year life of the contract. In exchange, the vendor provides the equipment on which to use its reagents and supplies. The provider benefits via a lock-in of reagent and supply prices over time, the avoidance of a large cash outlay for equipment, and the ability to update to the latest version of the technology at the end of the contract. The vendor benefits from the guaranteed long-term cash stream that the contracts provide.

Borrowing. When deemed necessary, cash can be borrowed from a bank at approximately the prime interest rate or through the issuance of bonds. Important here is the ability to repay the borrowed funds using "tomorrow's" cash from operations. Borrowing has an effect on the organizations financial ratio; this, too, must be taken into account. It is possible that this option cannot be used because the institution has exhausted its debt capacity (the ability to borrow based on the demonstrated, mathematically calculated ability to repay) or because that capacity is being reserved for a more important need.

Leasing arrangements. Often an attractive funding alternative for equipment acquisition, leases can be entered into with an equipment manufacturer or one of its subsidiary companies, or via a third-party leasing company. Many issues must be examined when selecting this funding option, not the least of which are changing technologies and equipment obsolescence, ownership at the conclusion of the lease, possible tax benefits, and so on. Polices should not be entered into without a thorough legal and financial review at the highest level of the organization.

Two different kinds of leases are available to support acquisition. A capital lease impacts the balance sheet of the organization with the equipment listed with the fixed assets and the total of lease payments reflected as long-term debt. An operating lease impacts the profit and loss statement, and its rent payments are shown in the operating expense section. Be careful to consult with the staff in finance because choosing an operating lease with its impact on long-term debt may place the organization in default on its other long-term debt obligations.

A lease is considered a capital lease if the following conditions apply:

- a lease term greater than 75% of the equipment's estimated life,
- an option to purchase the equipment for less than fair market value is provided,
- ownership of the property transfers to the lessee at the end of the lease term, or
- the present value of the lease payments exceeds 90% of the fair market value of the property.

A lease is considered an operating lease if the lessee acquires the equipment for only a small portion of its useful life.

Caution should be exercised before entering into a lease because of the effect lease payments have on the future. It is possible to benefit the current year at the expense of the future. Table 7.5 shows an example of leasing as a constraint on the future. With a limited capital equipment budget in 20X1, the organization turned to capital leasing to "stretch" its

Table 7.5
Effect of Leasing on the Future ($000s)

	Fiscal Years			
	20X1	**20X2**	**20X3**	**20X4**
Maximum available capital budget funds	$2,000	$2,000	$2,000	$2,000
Deductions:				
Amount committed to lease #1	(300)	(300)	(300)	(300)
Amount committed to lease #2		(400)	(400)	(400)
Amount committed to lease #3			(500)	(500)
Amount committed to lease #4				(600)
Remaining available capital budget funds	$1,700	$1,300	$800	$200

available capital dollars. In effect, it acquired a $1 million piece of equipment for a much smaller annual lease payment. It did the same in 20X2 and 20X3. By the time 20X4 arose, however, the capital budget funds are nearly exhausted. Capital leases can also constrain an organization's ability to borrow money because a capital lease is a form of borrowing and as such it eats into debt capacity.

For department managers, understanding whether a lease is a capital lease or an operating lease is essential. With a capital lease, the payments would come from the capital budget, as shown in Table 7.5. With an operating lease, the payments are charged to the expense budget, and an appropriate amount should be provided in the operating budget to cover those payments.

Cash on the balance sheet. Three accounts on the balance sheet of the organization seeking to acquire the equipment can be thought of as sources of cash: accounts receivable, inventory, and accounts payable. The amount of cash will improve if the accounts receivable can be collected faster, if the amount invested in inventory can be reduced, and if the bills (the accounts payable) can be paid more slowly. The best way to visualize this is to think of the accounts receivable as cash that can either be owed to the organization or paid to the organization. If it takes 120 days to collect the bills and that amount of time can be reduced, a one-time addition to cash can be generated. Table 7.6 shows the impact of these three accounts.

Using the hypothetical account balances in the table, if the receivables can be collected in 85 days as opposed to 120 days, the organization will generate cash faster and will add over $5 million to its cash balance. The same thing happens if the inventory can be reduced. Since it has a value of about $58,000 for every day, a reduction to 15 days, which will still leave more than two weeks' supplies on the shelves, had the potential to generate almost $2 million in added cash. Similarly, if the payment of bills can be stretched out so they are paid in 30 days as opposed to 15 days, over $9 million can be generated. The values for every organization will be different, but the effect is the same.

Off the balance sheet. This approach to acquiring assets is usually restricted to facility acquisition and involves another organization acting as a surrogate. To illustrate, assume that Memorial General Hospital wishes to erect a 100,000 square foot physician office building but does not have the financial strength to do so and lacks the debt capacity to borrow the funds. It approaches a real estate developer who agrees to build the building and rent the space to Memorial. In this way, the hospital gets the benefit of a building, but it is not on its balance sheet (thus the term off-balance-sheet financing).

Table 7.6
Cash Generated from Noncash Balance Sheet Accounts

Description	Amount	Current Days	Amount per Day	New Standard Days	Targeted Improvement (Days)	Cash Improvement
Accounts receivable	$19,319,814	120	$160,998	85	35	$5,634,945
Inventory	2,669,387	46	58,030	15	31	1,798,935
Accounts payable	9,196,324	15	613,088	30	15	9,196,324
Account balances	$31,185,525			Total improvement		$16,630,204

Combinations. For larger projects like a new facility, a combination of funding methods will likely be pursued. In all likelihood, the major source of funds would be debt—borrowed money. But any and all of the financing options previously described can be used in combination to provide the funding to complete the project.

STRETCHING LIMITED FUNDS

Even when alternative funding sources are identified and employed, the need arises to stretch the money, and several means are available to do so. Many organizations use sealed bid pricing to obtain the best price and terms from vendors. Some even use aggressive equipment consultants to negotiate significant discounts that individual organizations may not be capable of achieving.

Phasing the installation of certain systems can result in spreading the cash outlays over a period of time, perhaps years. In this way the capital budget funds for more than the current year can be applied to the acquisition. Monitoring systems are particularly receptive to this approach. Similarly, some pieces of equipment can be purchased in the current budget year, but some of the peripherals can be deferred to a subsequent year when more money is available.

It is also possible to purchase refurbished equipment at a fraction of the cost of new items. Laboratory instruments, portable x-rays and ultrasound units, ventilators, sterilizers, and countless other pieces of "previously owned" equipment are available from a number of vendors who have been in business for many years. The refurbished units come with warranties, liability insurance, and so on. These same vendors will rent equipment of all sorts with a variety of terms.

Because capital equipment items are associated with the balance sheet, there is no specific year to which items and transactions are assigned, as is the case with revenue and expense items. Because of this, if sufficient funds are not available in one fiscal year, but are available in the following fiscal year, the equipment can be purchased late in the first fiscal year and the funds from both years can be used for the purchase.

Finally, when faced with a critical shortage of funds for capital items, the priorities of the entire capital budget can be reexamined. This is one of the reasons that capital equipment committees should prioritize their final list of acquisitions. Those items with low priority score (using an A/B/C methodology) can be deferred and the remaining funds concentrated on the A and B items.

One of the biggest challenges managers face, especially those with less than a year or so of managerial experience, is that there is no guarantee that a request, even one supported by the finest objective data and analysis and enhanced by powerful emotional arguments, will be approved. If there is no money, there will be no approval. In a situation like this, a manager must be somewhat satisfied knowing he or she did the best job possible in preparing the request and then focus on helping the organization achieve its objectives.

CONSTRAINTS

There are always constraints on any process or venture. In capital equipment budgeting, one major constraint is the availability of funds. This determines the upper dollar limit for the budget. Throughout the process, success depends on everyone involved being aware of these limits. It is also essential that as many people as practical be involved so that a sense of participation in, ownership of, and support for the decision-making process will result. The objective is to give everyone a fair hearing. The true test of whether the process is working is if a manager who has had his or her request denied can say "I told them what I needed. I understood the constraints they were operating under, and I feel they treated me fairly. Maybe next year I will have better results."

As a reviewer, never put people off or ignore them. Always listen attentively. Remember, a piece of equipment that a reviewer thinks is unimportant may be the most important in the eyes of the person requesting it. Listen to people. Give them 15 or 20 minutes. At least extend them the courtesy of hearing their issues, problems, and concerns. It may turn out that they foresee a real opportunity for the organization that no one previously recognized. Consider that it is better to tame a wild horse than to ride a dead one. Dead horses have a tendency to just lie there, going nowhere. Wild horses on the other hand have a high energy level. They do a lot of wrong things, but they are very much alive, and they perform really well once they have been tamed. When someone has a far-out idea about equipment or renovations, listen to it. It may turn out to be the wild horse that will outperform someone else's dead one.

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Chapter 8

THE CASH BUDGET

The final of the three main organizational budgets may be the most important of all—the cash budget. It is prepared by the chief financial officer (CFO) and the finance staff. While department managers are not involved directly in its preparation, they can exert significant influence over its success. The cash budget deals with the money flowing into and out of the organization—the working capital—the lifeblood of any organization. In many respects, this budget is analogous to a personal household budget: money coming in from wages, interest on bank accounts, sale of a used car and money going out for groceries, mortgage payments, retirement investments, tuition, and so on.

CASH INFLOWS AND OUTFLOWS

Cash comes into an organization from three sources: the operating activities of the business, investing activities, and financing (associated with debt) activities. These three areas are also sources of cash flowing out of an organization.

Operating activities. These include the activities reflected in the operating statement (the P&L or statement of profits and losses) of the organization—the revenues and expenses of running the business. In addition, asset and liability activities can be sources (inflows) and uses (outflows) of cash. As accounts receivable are collected, for example, cash increases (an inflow). When liabilities are paid, cash flows from the organization (an outflow). Growth of inventories is a use of cash and reduces the amount available for other purposes. Similarly, paying bills too soon consumes cash needlessly.

Investing activities. One of the largest investments an organization makes is the purchase of property, plant, and equipment assets. But well-run companies are careful to use their excess cash wisely and often

purchase short-term investment instruments. Depending on the timing of future cash requirements, they may also put excess cash into longer-term investments. Conversely, cash is generated by the sale of such investments. Such investing activities are not confined to stocks and bonds but can include acquiring or disposing of an ownership share of a complementary business venture.

Financing activities. The third kind of transactions relate to debt. Cash is generated and flows into the organization as a result of issuing debt or borrowing from banks and others and flows out when debt is paid—either retired (paid off) entirely or partially. Debt as a category can include long-term notes payable, mortgages, bonds, and capital lease obligations.

The CFO and those in finance charged with managing cash work to maximize its effectiveness. They focus on investing excess cash, looking to manage the balance sheet accounts in ways that maximize cash flow, and making sure to have sufficient liquidity (the ability to pay current obligations with cash) to keep the business running smoothly. Failing to manage cash properly can result in an organization finding itself placed on "credit hold" with vendors because of unpaid bills. This not only disrupts the flow of supplies but also can compromise patient care delivery.

It is important to remember the interplay among the operating, capital, and cash budgets. As depicted in Figure 8.1, the three must work collectively and collaboratively if the organization is to succeed, working harmoniously to achieve the objectives.

With the exception of large amounts of borrowing associated with facility construction projects or business acquisitions, the operating activities should be the largest source of cash for the organization. It is this cash that provides the routine fuel for the capital budget. In turn, the equipment acquired as part of the capital budget provides the hardware to support the operating budget. The cycle then continues with operating budget throwing off cash that feeds into the cash budget.

ROLES IN BUDGETING AND MANAGING CASH

The CFO and his staff prepare the cash flow budget by determining targets for selected cash and cash-related items. They consider cash flowing into and out of the organization, including the cash accounts, the age of accounts receivable and inventory, outlays for equipment, pension plan contributions, investments (both buying and liquidating), and financing (debt issuance and payments) and any business acquisition amounts. Targets must be set realistically and based on the general assumptions and targets in both the operating and the capital budgets.

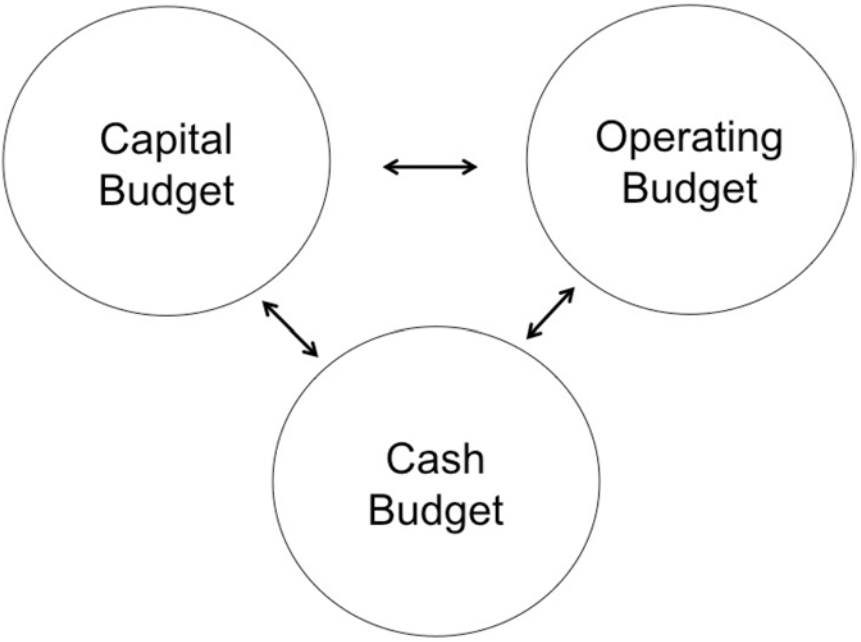

Figure 8.1
The cash budget can fuel the capital budget that, in turn, provides the equipment and technology to support the operating budget. The operating budget generates cash that feeds into the cash budget.

Non-financial managers, while not directly involved in this cash budgeting process, can have significant impact based on how they use the resources of the organization, how they communicate their spending plans, and how accurately they gather data for billing.

The manager of an imaging department, for example, must let finance know when he or she plans to place a large, multimillion-dollar order in order to make sure the cash is available. The clinic manager must make sure that billing information is accurately collected. Simple errors in recording insurance information can translate into billing problems, uncollectible receivables, and a lack of cash.

CASH FLOW CONSIDERATIONS

Cash is the lifeblood of any organization; run out of it and bankruptcy soon follows. Bankruptcy is, in fact, not determined by profit or loss position but rather by liquidity—the ability to pay the bills as they come due.

Excess cash not needed for day-to-day operations can be invested and earn a return—interest income. Further, cash needs to fuel the operation of any company, and managers who do not pay attention to it can run into trouble very quickly. What about a start-up company that will be able to generate $100,000 in revenue once it gets going but needs $60,000 for staff salaries from day one? How will it survive? Lacking sufficient cash at the very start could put this company out of business before it ever gets started. For this reason, new companies almost always need to secure a cash flow loan from a bank to give them sufficient cash to operate while building their revenue (and associated cash) stream.

Do not lose sight of the fact that a company can make a profit but not generate sufficient cash to remain in business. If a hospital does not collect its receivables, revenue will not convert to cash. If too much cash is used to acquire equipment, there may not be sufficient cash left over to pay trade accounts payable. Supply vendors may stop selling to the organization. To see how cash and profits relate to each other, consider the following scenario.

A new service requires an expenditure of $60,000/month for salaries. The service will generate revenue of $100,000/month, but only after it has been open for three months while staff are trained and get everything set up. As the revenue is billed, there will be a lag time of about 90 days waiting to be paid. Will the business make a profit in its first year?

Examining the data shown in Table 8.1 reveals that the business will, in fact, make a profit of just under $200,000 in the first year (Column D). The cash situation, however, looks a lot different. This organization is "bleeding cash," as the saying goes, losing $120,000 of cash (Column E) in the first year. There is even the possibility that the business will not survive the first few months in operation because of a cash shortage. Note that $60,000 per month is spent for staff salaries before the first bill goes out. And when the time it takes for bills to be paid is taken into account, a total of $360,000 is spent before the first dollar comes in the door. If this business is to be operated successfully, some sort of cash flow loan will be required to cover up front cash losses. It would be prudent to present the strong profitability picture to a bank and seek perhaps as much as $400,000 in up-front cash flow financing. As profitable as it appears this business will eventually become, a bank loan should not be difficult to obtain.

Three points must be kept front and center in dealing with cash. First, profit does not necessarily equate to cash. Second, cash supports organizational growth and maneuverability. Third, running out of cash can lead to bankruptcy.

Table 8.1
Revenue and Cash Flow Data

	Billed Revenue (A)	Cash Collected (B)	Salaries Paid (C)	Profit or (Loss) (D)	Cash Flow (E)
January			$60,000	($60,000)	($60,000)
February			60,000	(60,000)	(60,000)
March			60,000	(60,000)	(60,000)
April	$100,000		60,000	40,000	(60,000)
May	100,000		60,000	40,000	(60,000)
June	100,000		60,000	40,000	(60,000)
July	100,000	$100,000	60,000	40,000	40,000
August	100,000	100,000	60,000	40,000	40,000
September	100,000	100,000	60,000	40,000	40,000
October	100,000	100,000	60,000	40,000	40,000
November	100,000	100,000	60,000	40,000	40,000
December	100,000	100,000	60,000	40,000	40,000
Total	$900,000	$600,000	$720,000	$180,000	($120,000)

CONCLUSION

Several points must be kept in mind. Cash is necessary to fuel organizational growth. It allows the organization to purchase volume-generating equipment, build and renovate facilities to draw patients, and acquire businesses that complement the core business. For this reason, CFOs carefully steward company cash. They invest it when possible and carefully build cash reserves to keep the business going in the face of a downturn in volume.

Consider an organization that provides services in a summer resort community and sees 70% of its business in the months of June, July, and August. The rest of the business is spread throughout the other nine months. How does such a business remain solvent if it does not have a cash reserve to cover staff and other costs (rent, utilities, etc.) when there is little volume in those off months, when cash is largely flowing out instead of in?

Just as maneuverability in warfare is essential to success on the battlefield, organizations need to be maneuverable in a changing regulatory and reimbursement environment. Cash fuels maneuverability.

Finally, companies can be profitable but still face bankruptcy if they do not manage their cash and liquidity appropriately. Many years ago, a

hospital in Maryland was forced into bankruptcy. This was not because it was losing money. Quite the contrary, it was profitable. But it did not manage its accounts receivable properly, and the lack of positive cash flowing from collecting those amounts meant the hospital was unable to pay its vendors. Its liquidity was compromised. This situation spiraled out of control until it was forced to seek bankruptcy protection. That hospital no longer exists.

Chapter 9

FINANCIAL STATEMENTS

The best ways to understand the results of financial management is by examining three financial statements that provide a summary of what transpired during a given period of time (e.g., the month of January, last fiscal year) or the financial status on a particular date (e.g., June 30, December 31). These financial statements are produced for every company: the balance sheet, the statement of operations (often referred to as the P&L or profit and loss statement), and the statement of cash flows.

THE BALANCE SHEET

Diagrammatically, the balance sheet (Figure 9.1) can be thought of as a family portrait. It depicts the status of a business on a particular date, just as a family portrait freezes the action at a particular time. Like the family portrait, it is a snapshot as opposed to a movie. It does not cover what happened over the course of time but rather is a picture of an instant in time. As depicted in Figure 9.1, the assets are on the left side of the statement and the liabilities and equities are on the right side.

The balance sheet tells what is owned by the company (assets), what is owed (liabilities), and the difference between what is owned and what is owed (equity or net assets). Assets are generally described as current assets (cash, short-term securities, accounts receivable, inventory) and long-term or fixed assets (typically, property, plant, and equipment). Liabilities are generally classed as either current liabilities (amounts that are due and payable during the next 12-month period) or long-term liabilities (representing those debts that will not be paid during the next 12 months). Equity, a surrogate for the value of the company, is the difference between what is owned (the assets) and what is owed (the liabilities). Depending on the type of company, this may be referred to as owner's equity,

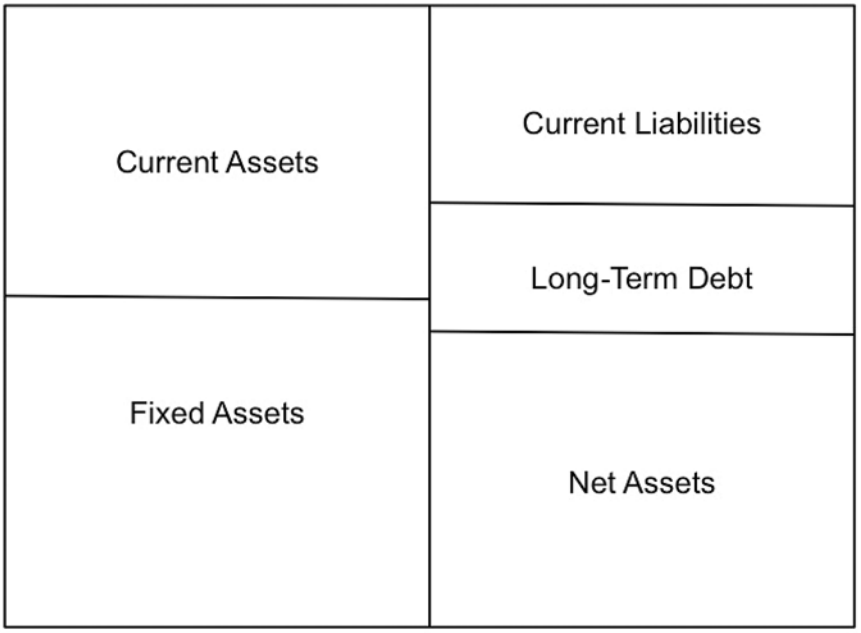

Figure 9.1
The typical balance sheet layout with assets on the left and liabilities and net assets (or equity in the for-profit sector) on the right.

stockholder's equity, fund balance, the capital account, or, simply, capital, or in the case of most nonprofit organizations, net assets.

A balance sheet can generally be displayed in three ways. Often, it is prepared on a single page with the assets on the left and the liabilities and equity on the right. If the balance sheet contains a significant amount of information, it may be displayed on two facing pages, with the assets on the left-hand page and the liabilities and net assets on the right-hand one. Occasionally, a balance sheet will be stacked vertically on a single page with assets at the top and liabilities and net assets at the bottom. Regardless of the format, the amounts shown represent the balances of the various items as of the date of the financial statement, hence the title balance sheet. Some think it is called a balance sheet because the left side (assets) is balanced by the right side (liabilities and net assets). This, however, is more urban legend than fact.

It is possible to learn more by examining an actual balance sheet to see what information is presented. Table 9.1 shows the assets section of the

Table 9.1
Mythical Community Healthcare Company
The Balance Sheet
as of June 30, 20X2, and 20X1

	20X2	20X1
Assets		
Current assets		
Cash and cash equivalents	$1,145,449	$1,213,026
Short-term investments	91,905	87,267
Accounts receivable, less allowance (20X2 = $3,084,330; 20X1 = $2,489,242)	17,942,004	15,470,077
Other receivables	2,276,821	2,058,476
Due from affiliates	1,529,929	1,295,952
Inventory	1,274,718	1,187,772
Prepaid expenses	847,219	709,945
Total current assets	$25,108,045	$22,022,515
Other assets		
Long-term investments	$9,464,738	$9,160,460
Investments in joint ventures	4,485,932	1,392,730
Interest in net assets of foundation	4,862,730	4,216,069
Total other assets	$18,813,400	$14,769,259
Property, plant, and equipment		
Land	$1,423,566	$1,181,459
Land improvements	2,288,322	2,282,622
Buildings	52,475,472	50,263,586
Equipment	60,792,349	58,809,209
Construction in process	1,472,821	1,004,301
	$118,452,530	$113,541,177
Less accumulated depreciation	77,300,854	72,242,238
Net Property, plant and equipment	$41,151,676	$41,298,939
Total assets	$85,073,121	$78,090,713

balance sheet of Mythical Community Healthcare Company. The initial reaction to the substantial amount of information presented might be that it is impossible to understand all of these numbers. It is possible, however, if the information is examined methodically. Two columns of numbers are displayed for each of the two dates June 30, 20X2, and June 30, 20X1. Note the wording in the heading of the balance sheet. It is from a specific

date. In reality, the amounts displayed can, and likely will, be different the day before and the day after. That is because the balance sheet displays the balance of the accounts, not the activity in the account. To the left of the balances are the descriptions for the dollar values displayed.

Current assets are grouped together at the top. These include the organization's cash as well as those other assets will that will be converted to cash or consumed within one year from the date of the balance sheet: short-term investments, inventories, accounts receivable, and prepaid items that will benefit the future 12-month period. The short-term investments will be converted to cash fairly quickly as opposed to long-term investments (one hospital owns the title to a gold mine!) that will be kept for many years.

The largest current asset typically is the accounts receivable, specifically those owed by patients. Staff in the organization's billing operation seek to collect the patient accounts receivable as quickly as possible, again, converting it to more useful cash. The balance sheet displays both the net accounts receivable ($17,942,004 and $15,470,077) and the amount of allowances for those amounts owed that will likely not be collected ($3,084,330 and $2,489,242, respectively). This gives those examining the financial statements more information: nearly $21 million is actually owed to the Mythical Community Healthcare Company, but just under $18 million is expected to be collected. This represents what is referred to as "full disclosure" reporting.

Inventories contain the stores of day-to-day supplies used in the organization. The supplies in the individual departments are usually not considered part of this formal inventory. The materials management experts strive to keep inventory at the lowest possible level, barring shortages of critical supplies, in order to conserve cash. A preventive maintenance contract is an example of a prepaid expense. The contract may be paid on January 1 for services provided each month for the next year. That right to service is considered an asset—something the organization owns.

To better understand the nature of the current assets, consider, for example, the $1,145,449 of cash listed in the 20X2 column. It is not the same cash listed in the 20X1 column ($1,213,028). In effect, the $1,213,028 of cash has been fully consumed in the past 12 months and has been replaced by a new batch of cash amounting to $1,145,449. This process, which applies to receivables, inventory, and all the other assets, is called asset turnover or just simply turnover.

Next in the balance sheet come the longer-term assets, including just under $19 million of long-term investments and the property, plant, and equipment valued at $41 million net of accumulated depreciation. These assets will remain for many years.

The property, plant, and equipment section pulls together all of the facility assets of the organization. Land is always listed first at its original acquisition price. Next come land improvements (parking lots, sidewalks, etc.), buildings (including the electrical, plumbing, air handling, and other systems), equipment (ventilators, MRIs, OR lights, etc.) and, finally, construction in progress (the investments thus far in projects that are not yet completed). All of these assets, except the land and construction in progress, are recorded in the company's books and displayed on the balance sheet at the price originally paid for them and are depreciated over time (see Chapter 2 for an explanation of depreciation methods). The accumulated depreciation is also shown to arrive at the net or book value of the asset.

As displayed in Table 9.2, the liability section of the balance sheet is similarly arranged with a column of descriptors and two years of dollar values to the right.

Table 9.2
Mythical Community Healthcare Company
The Balance Sheet
as of June 30, 20X2, and 20X1

	20X2	20X1
Liabilities and net assets		
Current liabilities		
Trade accounts payable	$7,847,850	$9,918,183
Accrued payroll and related expenses	4,849,234	4,231,450
Accrued interest payable	348,351	353,672
Estimated settlements due to third-party payers	1,472,532	804,891
Advance payments	794,186	414,193
Current portion of long-term debt	1,302,774	1,151,164
Current portion of capital lease obligations		49,205
Total current liabilities	$16,614,927	$16,922,758
Long-term debt, less portion classified as current	$23,449,935	$21,495,252
Accrued postretirement benefit liability	3,924,186	5,199,155
Total liabilities	$43,989,048	$43,617,165
Net assets		
Net assets at beginning of year	$34,473,548	$34,473,548
Change in net assets	6,610,525	2,423,176
Net assets at end of year	$41,084,073	$34,473,548
Total liabilities and net assets	$85,073,121	$78,090,713

Here again, the current items are listed first, followed by those with longer lives. The current liabilities are those which will be paid off during the next 12 months and subsequently replaced by others. As is typical in most organizations, the trade payables and accrued liabilities represent the bulk of the current liabilities. Long-term liabilities, sometimes referred to as long-term debt or simply debt (often, the term "debt" carries with it the notion of long term, whereas "liability" conveys short term), are those that will not be paid off anytime soon. The personal financial corollary is a home mortgage, which may be paid off over 20 or 30 years.

In Mythical Community Healthcare Company's case, the final items on the balance sheet are the equity items—called net assets in this case because the organization is a tax-exempt one (sometimes referred to as nonprofit). Were it to be a taxable organization (sometimes called for-profit), the section might be labeled owner's equity, stockholder's equity, or some similar phrase to denote that this is the net ownership section—representing the difference between what is owned, the assets, and what is owed, the liabilities.

THE INCOME STATEMENT

The financial statement that summarizes the revenue and expense items, and the difference between them, is called the income statement. The income statement has a number of informal names as well, often called the "profit and loss statement," the "P&L," the "statement of earnings," the "operating statement," or the "statement of operations." For nonprofit or tax-exempt organizations, it is often called the "statement of support, revenue and expenses." Regardless of its formal or informal name, the income statement is prepared for a specific length of time, customarily one year for formal, external purposes, and more frequently for internal purposes. It is not uncommon, for example, for a board to review the income statement on a monthly basis. While the income statements for various health care organizations can vary in terms of appearance, they generally report the following information.

Note the date difference between the balance sheet and the income statement shown in Table 9.3. While the balance sheet date uses an "as at" or "as of" format, the income statement is always "for the xx months ended" format. This is because the income statement is a statement of activity (what happened financially during the period being reported), while the balance sheet is a statement of position (on the date of the statement).

At the top of the income statement are the revenues. Net patient service revenue is the amount paid or promised for the firm's goods or services during the accounting period. Net revenue begins as gross revenue (the

Table 9.3
Mythical Community Healthcare Company
Income Statement
for the 12 Months Ended June 30, 20X2, and 20X1

	20X2	20X1
Net patient service revenue	$113,642,095	$110,115,455
Other operating revenues	4,510,641	4,985,706
Total operating revenue	$118,152,736	$115,101,161
Less operating expenses		
Salaries, wages, and fringe benefits	$54,816,672	$55,768,507
Supplies and other expenses	19,464,583	19,699,130
Purchased services	29,196,875	29,548,694
Depreciation and amortization	6,035,523	5,992,623
Interest expense	2,028,558	1,669,031
Total operating expenses	$111,542,211	$112,677,985
Excess of revenue over expenses	$6,610,525	$2,423,176

amount billed for the goods or service), which is reduced by deductions for bad debts, charity care, and third-party discounts. Other operating revenue includes revenues from those sources associated with, but not directly connected to, the health care operation. These can include the proceeds of gift shops and parking lots. They are part of the day-to-day operation of the business but not the health care part of the business.

Next come the operating expenses, which are the costs of doing business: salaries, wages, employee benefits, supplies and service, purchased services, repairs and maintenance, interest, and depreciation. Salaries and fringe benefits are typically the largest single expense in health care organizations, in some cases representing as much as 65% of total expenses. In some departments, salary costs can run between 90% and 95% of total cost.

Supplies and purchased services represent the next large expense amounts and are followed in the normal array of items by depreciation expense—the cost of consuming the property, plant, and equipment assets in the conduct of the business. Finally, interest expense, the fee paid to those who have loaned the organization money, is listed to complete the operating expenses.

The operating profit or (loss), or operating margin, is calculated by deducting the operating expenses from the combination of net patient service revenue and other operating revenue. In this example, the profit, termed "excess of revenue over expenses," is more than $6.6 million.

If there are any non-operating income/expenses, follow after the operating profit line and include those income or expenses that are not part of the routine operation of the business. These include donations and gifts, and profits or losses on the liquidation of securities. Finally, net income is calculated by combining the operating income or (loss) and any non-operating income/expenses. In Table 9.3, there is no non-operating income or expenses, and so net income is the same as excess of revenue over expenses.

Finally, an organization will occasionally report an extraordinary item, an event that is unusual in nature and infrequent in occurrence. These are separated from the other revenue and expense items because they are not part of normal operations. One example would be the conversion of the pension plan and its associated liability from defined benefit plan to a defined contribution plan. Another would be a restatement of profits from a prior accounting period. In such instances, the "bottom line" would be termed "net income after extraordinary items."

THE CASH FLOW STATEMENT

One financial statement that should receive more attention is the cash flow statement. It describes, as seen in abbreviated form in Table 9.4, the amounts and reasons cash flows into and out of the organization. Informally, the statement is sometimes referred to as the "Sources and Uses of Cash." Cash can flow into an organization from the regular operating activities of the company (think sales or profits from business activities), from borrowing (financing) activities, and from investing activities. Conversely, cash can flow out of the organization for business activities, for investments, and for the repayment of debt.

This statement, like the operating statement is a statement of activity and, thus, the date format follows the "for the xx months ended" convention.

In this example, the company added just over $7 million of cash from the ordinary operating activities of the company during the 12-month period ended June 30, 20X2. At the same time, it had a net reduction of cash of over $11 million associated with investing activities, buying equipment, selling and purchasing investments, and so on.

As a general rule, the amount spent each year on property, plant, and equipment (PPE) assets should amount to 125% to 175% of the annual depreciation amount. In other words, if an organization has $6 million of depreciation expense, it should invest in between $7.5 million and $10.5 million in PPE.

Table 9.4
Mythical Community Healthcare Company
Abbreviated Cash Flow Statement
for the 12 Months Ended June 30, 20X2, and 20X1

	20X2	20X1
Cash flows from operating activities		
Net cash provided by (used in) operating activities	$7,070,600	$(463,333)
Cash flows from investment activities		
Additions to property, plant, and equipment	$(5,953,446)	$(3,872,887)
Net (purchases) sales of short-term investments	(4,638)	(3,877)
Sales of long-term investments	13,597,304	12,478,507
Purchases of long-term investments	(13,164,211)	(12,687,765)
Advances to joint ventures, net	(5,917,183)	(579,700)
Change in capital acquisition fund		1,568,542
Net cash used in investing activities	$(11,442,174)	$(3,097,180)
Cash flows from financing activities		
Proceeds from long-term debt	$2,861,730	
Repayments of long-term debt and capital lease obligations	(1,206,078)	(1,606,946)
Payments of deferred financing costs	(19,479)	
Grant received for capital improvements	1,200,000	
Net proceeds from line of credit	833,534	3,760,000
Cash received from foundation for capital acquisitions	634,291	70,584
Net cash provided by financing activities	$4,303,998	$2,223,638
Net decrease in cash and cash equivalents	(67,576)	(1,336,876)
Cash and cash equivalents at beginning of year	1,213,025	2,549,901
Cash and cash equivalents at end of year	$1,145,449	$1,213,025

Finally, the company added over $4 million in financing activities. The net of all of this activity is a reduction in cash of $67,576. For a second straight year the company reduced its overall cash balance. This is something management and the board will want to pay close attention to, as cash is essential to liquidity and financial maneuverability.

An excellent free resource for further understanding of corporate financial statements and their contents is the Merrill Lynch booklet available via Stanford University's website: http://e145.stanford.edu/upload/Merrill_Lynch.pdf

THE ANNUAL AUDIT

Each year, large tax-exempt and taxable organizations arrange for independent accountants to examine the books and records of the company and express an opinion as to the veracity of the financial statements. Such an audit will produce four items which must be taken as a unified whole: an opinion letter, the financial statements, notes to the financial statements, and, if necessary, supplemental financial statements helpful to understanding the information conveyed by the company. These items should never be separated. In fact, if they are separated, the financial statement cannot be referred to as audited.

A typical opinion letter is shown in Appendix 1. It conveys the financial statements, describes the responsibility of management for the financial statements, defines the scope of work and the responsibility of the auditors, and lastly contains an opinion about the financial statements. The auditor's opinion of the financial statements adds assurance to interested outsiders that management's representations are not misleading. It does not, however, guarantee that the statements are totally accurate. If any irregularities are discovered, the opinion letter will spell them out. This alternate opinion letter is called a qualified opinion letter.

The auditors will also review the monthly or quarterly unaudited statements, often presented at board meetings, to make sure the results reported on an interim basis are in agreement with the final year-end results. Should there be accounting discrepancies, for example, if the interim statements presented a better financial picture than the final, audited results, the opinion letter will spell out this discrepancy. Depending on its nature and significance, it could result in a qualified opinion letter—not something any chief financial officer would like to see.

In addition to the annual audit report, the audit firm will provide a management letter. This document describes its observations and recommendations related to the company's finance activities. The letter might, for example, note that all of the company's cash is on deposit with a single bank and recommend that it be split among several banks to avoid risk. Or it might speak to weaknesses discovered in the fixed assets system (how the organization's various pieces of equipment are tracked) and make

recommendations. While company management is not obligated to accept and act on the recommendations, prudence would suggest otherwise.

Finally, as part of the annual audit, the auditors will test and comment on the internal controls in place. These are internal procedures designed to reduce the incidence of fraud and assure transactions are properly recorded. For example, no single worker, regardless of title, should be able to bill for services, make adjustments to the bills, and receive and post payments. To allow this would be to invite fraud in which a bill could be rendered, the payment pocketed, and the bill written off as uncollectible all by the same individual worker. Such fraud, though rare, is not uncommon and usually is the result of an absence of proper internal controls or a lapse in their use. The separation of these job responsibilities limits but does not entirely prevent fraud. Two or more individuals could always collude to defraud the company, an activity that could be very difficult to uncover.

EXAMINING THE FINANCIAL STATEMENTS

The questions most people ask about the financial statements generally relate to which items should be examined and how to understand what the report is saying. Since financial statements typically display two years of comparative information, it is possible and even prudent to start by making comparisons from one year to the next.

Using the information contained in the financial statements of Mythical Community Healthcare Company, why have the patient accounts receivables grown? Is the growth caused by an increase in billings or a reduction in the collection effort? Why have salaries and staff costs gone down while revenue has risen? Why are receivables growing faster than revenue? These questions can derive from looking at one year's values compared to the previous year and by comparing related items from one statement to the other. The idea is to determine what message the financial statements are sending. In the case of Mythical Community Healthcare Company, one message seems to be that the receivables are not being well managed. And since the cash balance is declining, what impact will this performance have on the future liquidity of the organization? With revenue increasing and staff costs decreasing, it is natural to ask how the provision of care is being effected.

In addition to these and similar questions arising from a comparative analysis of the reported results, some specific items should be discussed and understood. These questions focus on the balance sheet, income statement, and cash flow statement.

On the balance sheet, attention should be paid to the cash position, both the amount of cash and the number of operating days of cash on hand (see the section Financial Ratios for more on this ratio). In addition, the age of the patient accounts receivable should be examined to make sure proper efforts are being made to turn this largest of the current assets into cash as soon as possible. In the fixed assets section, attention should focus on the average age of the physical plant to make sure the facilities and equipment are not getting too old to be of efficient or effective use in providing care. Buildings that are too old often cannot support modern technologies. Departmental adjacencies can be problematic in older facilities.

Consider the inefficiency that is built in if it takes 20 minutes for a nurse or tech to push a stretcher from the ED to the CT/MRI suite. That represents a 40-minute time span when the ED exam room is out of service. Time losses like this can influence divert time which translates into the potential for lost visits and revenue with no diminution of cost. If the CT/MRI suite was located next to or within the ED, such a capacity loss would not be incurred. The institutional impact on divert times can be calculated by multiplying the annual number of scans performed for the ED by the round-trip travel time.

Putting some numbers on this scenario may help illustrate the significance of an inefficient building. Assume an annual visit count of 60,000 visits with two-and-a-half ambulance arrivals on average per hour. If 10% of visits required a 40-minute round-trip to the CT/MRI suite, exam rooms would be blocked for 4,000 hours a year, roughly 10 hours per day. If the ED experienced just a single hour of divert time each day with ambulances rerouted to other facilities, the impact on volume and revenue would be significant.

Assuming the average ambulance contained a patient needing to be admitted, how many admissions, and the associated revenue, would be lost because of this travel distance? At roughly $10,000 of revenue per ambulance, the impact on revenue as seen in Table 9.5 can be substantial.

Table 9.5
Revenue Impact of ED Divert

ED divert hours per day	1
Ambulances per hour	3
Diverted ambulances per day	3
Calendar days per year	365
Diverted ambulances per year	1,095
Average revenue per ambulance	$10,000
Potentially lost revenue	$10,950,000

In addition to the assets, executives and board members should look closely at long-term debt and debt capacity (the ability to take on added debt based on the ability to repay it). Debt can rob an institution of maneuverability in a dynamic market by requiring its profits to be diverted to repayment instead of repositioning. And insufficient debt capacity can limit the ability to borrow funds if resources are not otherwise available to pursue objectives.

On the income statement, the attention obviously focuses on the "bottom line"—the amount of profit or loss. But the attention will also be on EBITDA (pronounced Eh'-bid-ah). These letters stand for Earnings Before Interest, Taxes, Depreciation, and Amortization. This is a measure of the core profitability of the organization, before any consideration of interest paid on debt, taxes, depreciation, or amortization. For Mythical Community Healthcare Company, the EBITDA profit is calculated as shown in Table 9.6.

The individual elements of the income statement are important as well and can begin with a focus on the mix of payers both in terms of position (the percentage distribution of volume and revenue among them) and in terms of trends (which ones are growing and which ones shrinking). Too much of one single payer may be dangerous. The loss of the contract with a payer covering a large percentage of the organization's business could result in a major hit to volume and revenue. And since revenues are far more variable on the down side than costs, the bottom line could suffer an immediate hit. As the density of Medicare and Medicaid as a percentage of payer mix rises, the ability to negotiate reimbursement rates falls. At some point, providers will be unable to shift unreimbursed costs to other payers.

Table 9.6
Calculation of EBITDA Profit

	20X2	**20X1**
Total operating revenue	$118,152,736	$115,101,161
Operating expenses		
Salaries, wages, and fringe benefits	$54,816,672	$55,768,507
Supplies and other expenses	19,464,583	19,699,130
Purchased services	29,196,875	29,548,694
Total	$103,478,130	$105,016,331
EBITDA profit	$14,674,606	$10,084,830

The relationship of net patient service revenue to gross patient service revenue should be scrutinized periodically to make sure the latter is not shrinking as the former grows. That situation could signal a problem with collections or perhaps a growth in discounts, charity care, and bad debts. Since gross patient service is not usually shown on the income statement, some direct questioning may be needed, or a request can be made for a specific analysis of the revenue stream.

Beyond salary and fringe costs, the number and types of vacancies should be understood along with the growth or shrinkage of the workforce. Again, this discussion may not be aided solely by the information contained in the financial statements, but, nonetheless, the discussion should happen. Since the provision of health care services is dependent on people, there must be assurances that the proper numbers and types of staff can be recruited and retained by the organization. Certainly staff shortages can result in higher labor costs associated with agency and overtime pay, but they can also affect the overall quality and availability of services. Staff vacancies should be clearly understood to make sure they are not compromising care. Significant shortages in nursing and pharmacy can result in an increase in medication errors and less-than-optimum patient care. While many look at full time equivalent (FTE) counts only in terms of growth, it is just as important to look at which positions are going unfilled.

Any extraordinary items must be thoroughly discussed both as to their financial significance as to the underlying dynamics that underlay them. While typically these are unusual and represent one-of-a-kind items, it is important to examine the environment from which they have sprung and understand how that environment may impact the organization again in the future.

When examining the statement of cash flows, it is important to examine the sources of the cash. How much is coming from operation of the business, how much from financing (borrowing), and how much from investing activities? Is the organization generating cash from the operation of the business, or is most of the cash flow associated with nonbusiness activities? Except in some relatively rare circumstances, the cash flow should be largely from business operations. Too much reliance on borrowing or the liquidation of investment assets suggests that the organization is not financially healthy enough to remain viable.

Cash reserves should be carefully managed to make sure the organization is able to withstand the normal up and down cycles many organizations experience over time. At a minimum, six months of operating cash—enough cash to pay routine operating expenses and make lease, debt, and interest payments—is prudent. Depending on circumstances, for

example, preparing for a planned acquisition, a larger cash reserve amount may be necessary. Cash not needed for operations in the short term should always be invested to maximize return.

Finally, the financial statements and the information they provide should be examined as a unified whole as opposed to individual statements. In this regard, the focus should be on the overall financial condition in all aspects of the organization. The overall health of the company is the basic question to be answered—is it a going concern? Perhaps the simplest way to understand the overall financial health of an organization is to see if it can obtain a bank loan. Banks balance risk and return and are not in the practice of making loans to businesses they think are not sound enough to repay the loan.

These questions and many others should be asked by the executive team of the organization and by its board to make sure the financial condition is sufficient and well managed enough to support day-to-day health care operations in both the short term and long term.

FINANCIAL RATIOS

Organizations come in all sizes; some are quite large, others small. As a result, balance sheets, income statements, and cash flow statements will also be different. A 1,000-bed hospital will have more cash and other assets than a 100-bed hospital. It may have more profit and more in the way of financing and investing activities to report. But size is only one aspect of financial performance. More important is the efficiency and effectiveness with which the organization uses its financial resources to achieve its stated objectives. A small organization may have a smaller profit and fewer assets but a higher return on assets than a larger organization. Financial ratios are used to assess this kind of financial efficiency.

Financial ratio analysis is the examination of one absolute value expressed in relative terms as a ratio to another absolute value. It is possible to draw a parallel between financial ratios and diagnostic test results the medical profession uses in determining the health status of the patient. In the business arena, financial analysts function like “dollar doctors” trying to determine the health status of the company along with symptoms, diagnosis, treatment recommendations, if any, and so on. There are over 100 different financial ratios measuring everything from the ability to satisfy creditors to efficiency to turning profits. For the purposes of this text, three groups of financial ratios will be considered: liquidity, asset activity, and profitability.

Measures of Liquidity

The first group of these ratios deals with liquidity—the ability to pay current obligations.

Current ratio. The current ratio represents the number of dollars of current assets that are available to cover each dollar of current liabilities.

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$$

Using the balance sheet of Mythical Community Healthcare Company (Tables 9.1 and 9.2), the current ratio is 1.51, meaning the organization has $1.51 of current assets for every dollar of current liabilities.

It is now possible to answer the question concerning health care Organizations A and B (Table 9.7). Which organization is better able to pay its bills? The correct answer, based not on absolute values, but rather on the financial ratio measuring liquidity (the current ratio), is Organization A, which has a current ratio that is nearly double that of Organization B.

Working capital. The same values used in determining the current ratio are used to determine working capital, but instead of division, subtraction is used. Using the same example as before, Health care Organization A with $3,000,000 of total current assets and $1,500,000 of total current liabilities would have $1,500,000 of working capital. While technically not a ratio (of one value to another), it is still an important indicator of liquidity.

Quick ratio. The quick ratio, sometimes referred to as the acid test ratio or simply the acid test, is a more demanding measurable of liquidity. The inventory values are eliminated from the calculation because they may not

Table 9.7
Selective Comparative Financial Data

	Health Care Organization A	Health Care Organization B
Cash on hand	$100,000	$200,000
Current assets	$3,000,000	$3,840,000
Current liabilities	$1,500,000	$3,200,000
Current ratio	2	1.2
Working capital	$1,500,000	$640,000

be converted to cash as quickly as other current assets. The quick ratio, therefore, is a more conservative financial ratio than the current ratio.

$$\text{Quick Ratio} = \frac{\left(\text{Total Current Assets} - \text{Inventory}\right)}{\text{Total Current Liabilities}}$$

The quick ratio equals total current assets minus inventory divided by total current liabilities. Using the values for Mythical Community Healthcare Company (Tables 9.1 and 9.2), the quick ratio would be 1.43, meaning the organization has $1.43 of current assets for every dollar of current liabilities. Keep in mind, however, that this ratio may not be much of an acid test for a health care organization in which inventory is a relatively small current asset. Perhaps acid test ratio in health care should instead look at current assets exclusive of all or some portion of the patient accounts receivable, which may not be easily converted to cash. If this were done, Mythical Community Healthcare Company's quick or acid test ratio would be 0.43—just 43¢ to cover each dollar of current liability. One could argue that some of the receivable is fairly quickly collectible and that use of 100% is too harsh. Using a technique called factoring, receivables can be "sold" to another company that passes along the cash and is then responsible for collecting the debt. Factoring firms charge up to 50% to 60% of the receivable's face value based on how long it has been owed. If one were to assume that half of the accounts receivable balance could be converted to cash quickly, the ratio would still be low at 97¢, roughly a dollar on a dollar.

Days of cash on hand. This indicator describes the organization's cash in terms of the number of days it could continue to pay its obligations if all incoming cash flow stopped. In this regard, it may be a better indication of liquidity than either the current ratio or the quick ratio.

$$\text{Days of Cash on Hand} = \frac{\text{Cash and Marketable Securities}}{\left(\text{Annual Operating Expenses} - \text{Depreciation}\right) \div 365}$$

Using the values found in Tables 9.1 through 9.4, it can be calculated that Mythical Community Healthcare Company has just 4.3 days of cash on hand. This means the organization would be able to pay its bills for less than a week if the cash flowing into the organization were to cease: a dangerous and risky position unless positive cash flow can be guaranteed moving forward.

Combined with the current and quick ratios, the picture painted of Mythical Community's liquidity is mixed. One would need to perform further analyses to determine the true liquidity situation and assess the risk of bankruptcy.

These ratios are among the most commonly used indicators of liquidity. As a rule, the higher the value, the better. As a trend, increasing ratio values are favorable. However, avoid the mistake of assuming that a high value is always a good sign and a low value is a bad sign. An institution with an excessively high current or quick ratio may, for example, not be investing enough funds in its property, plant, and equipment; this may cause a serious obsolescence problem at a later date.

Activity Measures

The second group of ratios also deals with liquidity, but expressed in terms of balance sheet activity—the time needed to convert balance sheet items into cash. Of interest are patient accounts receivable, inventory, and accounts payable.

Accounts receivable age. The average age of accounts receivable measures the approximate number of days that the receivables remain unpaid or outstanding. It tells how fast bills are turned into cash. It is, in essence, a ratio of the receivable and the average daily patient revenue (the patient revenue for a given period of time divided by the number of calendar days in that time period).

$$\text{Average Age of Accounts Receivable} = \frac{\text{Net Accounts Receivable}}{\text{Average Daily Net Revenue}}$$

Using the values displayed on the balance sheet of Mythical Community Healthcare Company, the calculations would be made as follows.

$$\text{Average Age of Accounts Receivable} = \frac{(\$17,942,004 - \$3,084,003)}{(\$113,642,095 \div 365)}$$

$$\text{Average Age of Accounts Receivable} = \frac{\$14,858,001}{\$311,348}$$

$$\text{Average Age of Accounts Receivable} = 47.7 \text{ days}$$

This means that it takes a little over a month and a half to convert a bill into cash. The organization must plan its use of resources with this time

lag in mind. As a trend, declining values are good. An accounts receivable that contains too many days of revenue means that cash is being tied up unnecessarily in receivables when it could be put to more productive use.

Accounts receivable turnover. This is a measure of the number of times each year that the accounts receivable are completely replaced or "turned over." Calculation involves dividing 365 days by the average age of the receivable. Using the previous data, the accounts receivable turnover rate is 7.65 (365 ÷ 47.7), meaning that the receivables turn over and are completely replaced about seven and a half times a year.

Average inventory age. This measures the number of days of supplies on hand in inventory, based on the organization's average daily use of supplies. The calculation requires several steps and a piece of data not found on the balance sheet. Step one is to determine the average inventory value by combining the inventory value at the end of the current period with the same value at the end of the prior period and dividing by two.

Again, using the values displayed on the balance sheet of Mythical Community Healthcare Company, the calculations would be made as follows.

Average Inventory value = ($1,274,718 + $1,187,772) ÷ 2
Average Inventory value = $2,462,490 ÷ 2
Average Inventory value = $1,231,245

Step two uses the piece of data not found on the balance sheet—the annual amount of inventory purchases. This can be obtained from the finance department or from the records in materials management. For this exercise, assume that inventory purchases as reported by the materials management department amounted to $11,081,205.

By dividing this amount by the average inventory value ($1,231,245), the number of inventory turns per year is calculated to be nine. In other words, the inventory is consumed and completely replaced nine times in the course of the year. If this number is then divided into 365, it indicates that the inventory contains, on average, about 40 days of supplies. Not considered in this is the "informal" inventory stored in nursing units, clinics, procedure rooms, and so on.

In this example, if all purchasing were to stop, about 40 days would pass before the inventory value dropped to zero. Generally, the lower the number of days, the better; however, a proper balance must be struck so that critical supplies are not out of stock. Noncritical items are of less concern and may occasionally be out of stock without causing operational

disruption. As a trend, declining values are good. Inventory age that is higher than necessary means that cash is being tied up unnecessarily in inventory when it could be put to more productive use.

Consider, for example, what would happen if the manager responsible for inventory were to reduce the average age to 30 days—a 25% reduction. At that level over $300,000 (25% × 1,231,245) would be available for other one-time uses such as equipment purchases and facility renovations.

Accounts payable age. On the flip side, accounts payable age is a measure of the average age of bills owed to creditors. Once again a piece of data not present on the balance sheet is needed to make the calculation; the information necessary is the annual credit purchases. Finance or the accounts payable department can supply the necessary data. For this example, using the accounts payable value shown on the Mythical Community Healthcare Company balance sheet ($7,847,850) and assuming annual credit purchases of $73,163,040, the age of the accounts payable would be calculated as follows.

$$\text{Average Age of Accounts Payable} = \frac{\text{Accounts Payable Balance}}{\text{Annual Credit Purchases} \div 365}$$

$$\text{Average Age of Accounts Payable} = \frac{\$7,847,850}{\$73,163,040 \div 365}$$

$$\text{Average Age of Accounts Payable} = \frac{\$7,847,850}{\$200,447}$$

$$\text{Average Age of Accounts Payable} = 39.1 \text{ days}$$

The lower the age, the faster bills are being paid. In times of tight money, the age generally will increase as efforts are made to conserve cash. Monies not used to pay current bills can be used for other purposes, up to a point. The payment terms generally extended by creditors cannot be consistently abused by late payment of bills without risking the loss of a vendor. Paying too quickly is also poor practice because it does not allow the available cash to work for the institution.

Average age of physical plant. One of the most significant and long-lasting investments large health care organizations, particularly hospitals, make is in facilities and equipment—referred to as property, plant, and equipment—the organization's buildings, equipment, and infrastructure systems. If the averages age is too high or is aging too rapidly, it indicates

both a lack of investment in the physical plant assets and looming obsolescence and inefficiency. The average age is expressed in years and is calculated as follows.

Average Age = Accumulated Depreciation ÷ Annual Depreciation Expense
Average Age = $77,300,854 ÷ $6,035,523

In the case of Mythical Community, the physical plant is 12.8 years. This is significantly older than the national average, which ranges from 9 to 11 years depending on region of the country. In this case, the organization will face mounting pressure to invest in equipment and facilities to improve operating efficiency and clinical effectiveness as well as the impression given to the public, which prefers modern over old facilities.

Profitability and Other Measures

The third group of ratios deals with profitability—how well the company uses its financial resources to generate profits.

Return on investment. Sometimes referred to as return on assets, this ratio is a measure of the ability to use company assets to generate profits. Of all the financial ratios, it may be the most important. The reason that the terms assets and investments are used interchangeably stems from the fact that a company's primary investment is in itself—its assets. The interpretation of this ratio is quite simple: the higher, the better. Consequently, increasing values over time represent a favorable trend.

Mythical Community Healthcare Company's return on investment (ROI) is 8.1%. The numerator is the annual profit and the denominator is the average asset value, the averages the 20X2 and 20X1 asset totals.

$$\text{ROI} = \frac{\text{Excess of Revenue over Expenses}}{\text{Average Asset Value}}$$

$$\text{ROI} = \frac{\$6,610,525}{(\$85,073,121 + \$78,090,713) \div 2}$$

$$\text{ROI} = \frac{\$6,610,525}{\$81,581,917}$$

$$\text{ROI} = 8.1\%$$

This means that the organization's investment in its own assets has earned 8.1%, a good return. It is the single most important ratio because it measures overall management effectiveness.

The ROI can also be calculated using the EBITDA profit (in this case $14.6 million). This version of the ROI calculation, which shows how the organization did exclusive of noncash items (depreciation) and apart from any taxes and interest, provides a better sense of how well the organization does based on its core profitability.

$$\text{ROI} = \frac{\$14,674,606}{\$81,581,917} = 17.98\%$$

The collection rate. This is an indicator of the amount of the revenue billed that is actually collected. The higher the value, the better. As a trend, increasing values are, of course, favorable. If a health care provider suffers from a declining collection rate trend, the eventual outcome may be bankruptcy. Consequently, the collection rate must be monitored carefully and frequently so that corrective actions can be taken quickly if necessary.

Since only net patient service revenue is reported on the income statement, further information is required of the finance staff. Dividing the net by the gross revenue amount provides the collection rate. For Mythical Community Healthcare Organization with net patient revenue of $113,642,095 and, for demonstration purposes, $174,800,000 of gross patient revenue, or charges, the collection rate would be 65%.

Operating margin ratio. This ratio measures the proportion of total operating revenue that is retained after all operating costs have been paid. It is a measure of profitability; nevertheless, comparison to industry averages should be made carefully. Above-average values can be misleading if there is a greater-than-average need for working capital, debt repayment, or investment in plant and equipment, all of which are funded from operating margin. Conversely, an organization with substantial endowment distributions or income from other outside sources such as philanthropy may have a lower operating margin requirement, and, thus, a lower ratio may be quite acceptable.

In the case of Mythical Community Healthcare Organization, the operating margin ratio is 5.6% ($6,610,525 ÷ $118,152,736). Using EBITDA, the ratio would be 12.4% ($14,674,606 ÷ $118,152,736).

SUMMARY

Many of those who examine financial statements and ratios are looking for clear-cut, black and white indications of a company's performance.

But there are no such indications. Circumstances always play a role and must be considered in reviewing the statements and ratios. The amount of cash on hand will be influenced by what an organization plans to do in the future. If it is about to acquire a large amount of equipment or purchase several physician practices, it may need the cash to make the purchases. Another organization of the same size, but which is not planning such acquisitions, may be perfectly fine with far less cash. An organization getting ready to issue a large amount of bonds to raise money for a major building program would concentrate on driving up its operating margin to present the best profit picture to potential bond buyers.

The rule of thumb in looking at liquidity and profitability ratios is that higher values are better and increasing values are favorable. When examining balance sheet activity measures, the rule of thumb is that for assets (inventory age and accounts receivable age), the lower the number of days, the better. With receivables, it means the bills are being collected and thus converted to cash expeditiously. With inventory, the lower the number of days of average age, the better; however, a proper balance must be struck so that critical supplies are not out of stock. Noncritical items are of less concern and may occasionally be out of stock without causing operational disruption. As a trend, declining values are good. Inventory age that is higher than necessary means that cash is being tied up unnecessarily in inventory when it could be used more productively.

With accounts payable, the lower the age, the faster bills are being paid. In times of tight money, the age generally will increase as efforts are made to conserve cash. Cash not used to pay current bills can be used for other purposes, up to a point. The payment terms generally extended by creditors cannot be consistently abused by late payment of bills without risking the loss of a vendor. Paying too quickly is also poor practice because it does not allow available cash to work for the organization.

Financial statement and ratio values can and should be compared to national and regional averages and, perhaps more important, to competitor organizations. These values are best judged in light of the organization's need for financial strength, growth, and maneuverability in a dynamic marketplace.

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Chapter 10

PERFORMANCE MEASUREMENT

A manager's responsibilities include planning, organizing, staffing, directing or leading, and controlling elements of the organization. In essence, the manager becomes the CEO of a particular element or elements of the organization. To do this successfully requires information, which is normally contained in periodically issued performance reports. These reports are usually prepared on a monthly basis and contain information about business volume, revenues, full time equivalents (FTEs), salary and fringe benefit costs, supplies, purchased services, and so on.

Much like the stadium scoreboard, which shows how the team is doing, performance reports show what the manager did and didn't do during the reporting period. Remember, accountants merely prepare the reports based on the actions of managers.

WHY ORGANIZATIONS REPORT ON PERFORMANCE

Several important reasons exist for reporting on departmental performance. First and foremost is the need to measure actual performance compared to planned performance. Is the manager running favorable to budget, or unfavorable? Is action needed to modify performance? Lacking a performance report, a manager is unable to influence performance in the appropriate manner.

A second reason is to increase awareness among all those working in the departments and throughout the organization. Workers in a department should understand how their actions have translated into performance results. Often, their actions are what makes or breaks departmental performance. Sharing performance report information with them is a way of "keeping them in the loop" when it comes to running the department. Similarly, managers and other departments need to be aware as well. This

is because the performance of any department is influenced by the performance of many other departments. The performance of the surgical intensive care unit (SICU) involves not only those working in the SICU but also those working in departments both upstream and downstream, such as the recovery room and the progressive care unit. The following scenario illustrates this relationship.

The manager in the post anesthesia care unit (PACU) implements a staffing reduction in order to comply with his salary budget and increase the level of productivity. With the lower staffing level, patients are not extubated before being transferred to the SICU. As expected, productivity in the PACU increases because of the reduction in staff FTEs. But because the additional work of extubating the patients has been passed along to the SICU nurses, it takes them longer to move patients through the SICU, thereby reducing their productivity level. This downturn in performance is reported only to the manager of the SICU. If, however, he or she shares the performance with the staff, the chances are good that the underlying cause of the decrease in productivity will be identified. If only the manager looks at the reports, the cause may not be identified. Further, if the manager of the PACU sees the drop in SICU productivity, he or she may be able to work to resolve the budget and productivity issues in both departments. Not knowing that the SICU has a problem, the PACU manager may take no action.

Related to the notion of increasing awareness is involvement of the management team. As a group, managers need to be aware of and understand performance levels throughout the organization. Since organizational performance is the sum of departmental performance, it is essential that the departments act in concert with each other. This requires that each know what the other is doing and how the various departments are performing.

A prudent approach to management dictates that periodically managers call a "time-out" and assess their performance. This is really no different from what nurses do at change of shift—the day shift hands off care to the evening shirt. Assessments are made and actions planned. Similarly with management, the assessment is based on the information contained in the performance reports, and the actions planned are those necessary to achieve compliance with the budget.

The last reason to report on performance is to achieve objectives. Without a good set of performance reports, managers are, essentially, flying blind. They do not know if they are performing better or worse than planned. Are they underachieving their goals or overachieving? What actions need to be taken? Which performances should be reinforced and which ones modified? Performance reports are an essential element in support of this main focus of a manager.

CHARACTERISTICS OF GOOD PERFORMANCE REPORTS

Good performance reports are timely, frequent, understandable, and comprehensive. The timeliness of the reports is judged by the amount of time that elapses between the end of the performance reporting period and the issuance of the reports. All too often in health care settings, reports are received well after the end of the reporting period. Departmental performance information for the three months ended on March 31, for example, may not be available to managers until the end of April. By then, however, another month has gone by. If performance has been poor, there is now another month of problematic performance before the manager becomes aware of the situation. Additional time will be spent analyzing the reported data before the manager can begin to take appropriate corrective action.

Consider, for example, the revenue performance displayed in Figure 10.1. After rising slightly in the month of February, revenue performance has

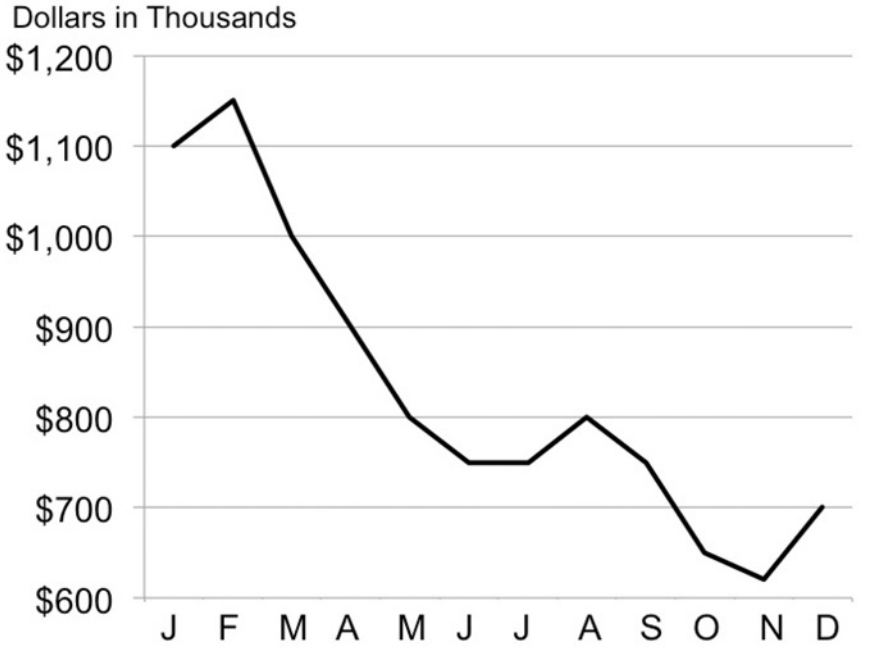

Figure 10.1
Revenue performance has been declining each month following a high of $1,150,000 in February. Earlier efforts to stem the tide may have helped avoid some of the decline.

declined nearly every month. Perhaps there is no real cause for concern at the end of the first three months, but when revenue declines again in the month of April, the manager should be worried. When will the April numbers become available to the manager? Regrettably, the answer is the end of May. The manager will spend some time then analyzing the revenue performance to determine what went wrong and to determine what actions can be taken to remedy the situation. That's going to take a bit of time. As a consequence, the manager may not be able to implement corrective action until sometime in the month of June. When will the reports for June be available so the manager can know if his actions were successful? Not until the end of July. And it will not be until sometime in August that the manager will have analyzed the data to determine, hopefully, the effectiveness of his remedial actions. Thus, the revenue slide that began at the beginning of the year may not be fully understood and corrected until nearly six months after the slide began.

This does not have to be the case, however. Other industries have discovered ways of getting performance reports to managers much sooner. In a health care setting, managers should work with the finance staff to make available the preliminary reports or reduce the time lag between the end of the reporting period and availability of the reports. This may require executive action to convince the finance department that timeliness outweighs accuracy. It should be remembered that the finance discipline places a significant value on accuracy of information. As a result, the accountants are reluctant to release reports until they are certain that they are as accurate as can be. This, however, works to the disadvantage of line management, which needs information as rapidly as possible, even if it is not entirely accurate. A simple test. Which is better? To know that preliminary actual spending is $755,000 compared to a budget of $700,000 or to wait a month only to find out that the actual spending is $757,000 compared to the same $700,000 budget? An active manager would rather have the report that's just slightly inaccurate because he can begin to take action immediately. It does not matter whether he is overspent by $55,000 or $57,000. What matters is that he knows his position and takes action immediately. Waiting an additional month for the modest increase in accuracy may result in a further deterioration of performance.

While managers must wait for performance reports dealing with overall performance, reports relative to salary costs are available on a more timely basis. Every pay period, the payroll report provides information for the pay period just ending. Considering that the labor resource represents as much as 65% to 70% of overall hospital operating cost, and at the department

level as much as 90% of operating cost, the use of payroll reports to control salary spending provides managers with an effective way to shorten the time and begin taking appropriate action far sooner than waiting for a summary performance report. In order to take advantage of this, however, it is essential that the budget be divided into pay periods, not just monthly amounts. In essence, this approach allows managers to manage the largest fraction of their budget with near real-time control.

The frequency of reports (how often they are received) is important as well. For the most part, a monthly reporting cycle works well for overall department performance management. Any more frequently and the reports would merely serve to confuse and disrupt management. The proper frequency for labor reports is every pay period. And, again, timeliness is essential. Reports should not lag past the end of the period being reported by more than a day or two.

When reports are prepared, finance uses a technique called data reduction (Figure 10.2) to summarize the data. In this example, it combines

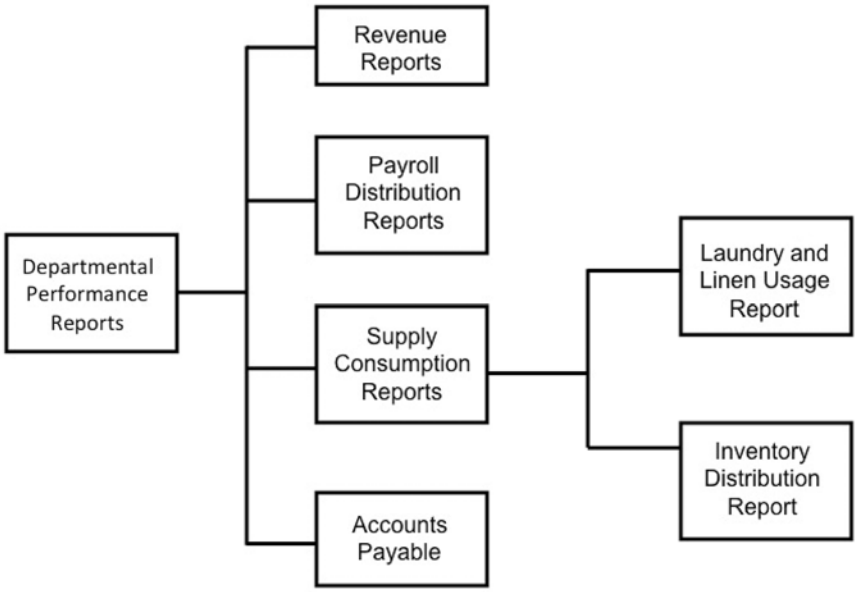

Figure 10.2
Data reduction is used to summarize and combine data into departmental performance reports. Laundry and inventory report data are combined and reported as part of the supply reports which, in turn, are combined with other reports to populate the departmental performance report.

information from a laundry usage report with that from an inventory distribution report to make a supply consumption report. In turn, that supply consumption report may be combined with other reports and funneled into an overall summary departmental performance report. Often, however, managers do not understand how the summarization process works.

When managers analyze their performance to determine, for example, what they are spending their consumable supply dollars on, they need to be able to backtrack through the summarized data to get to the source. How can they do this, if they do not know how the summarization was done to begin with? Managers should invest in the relationship with finance and work together to develop a reporting system road map that indicates how each line in the summary performance report accumulates data. Which reports funnel into which other reports? What lines from one report are combined onto a single line in another report? By understanding the data reduction routine, managers will be better equipped to analyze their performance and spot reporting errors.

In order to be effective, managers need information about the elements of the organization for which they are responsible. That means reports must support the information needs of the managers. Reports must be timely, understandable, and free of material misstatement. And the reports must be comprehensive, providing a detailed accounting for all transactions that affect the departments. A list of such reports is provided in Table 10.1 These reports must inform the manager about all aspects of the department's performance and provide what amounts to be a mini profit and loss statement supporting the notion that the manager is the department's CEO.

A departmental performance report will tell the manager, in a reasonably summarized fashion, about the revenues, expenses, and profits of the department for the time frame being reported. In most cases this is both the current month and the year-to-date.

Two other reports would support this departmental performance report. The revenue and usage report details volume of services and the revenues associated with them for those departments that provide billable services. The volume and service statistics report does the same for those departments like maintenance and medical records that are unable to bill for their services. These reports indicate the source of the volume, the locations of the services, and, in the case of revenues, whether it is inpatient or outpatient revenue and perhaps its third-party classification.

Since labor costs represent a substantial fraction of total operating costs, and at the departmental level may represent as much as 90% to 95%

Table 10.1
Financial Performance Reports to Support Management

Report Title/Description	Frequency
Departmental Performance Report	Monthly
Revenue and Usage Report	Monthly
Volume and Service Statistics Report	Monthly
Payroll Report	Pay period
Labor Distribution Report	Monthly
Position Control Report	Monthly
Supply Distribution Report	Monthly
Pharmaceuticals Usage Report	Monthly
Laundry and Linen Usage Report	Monthly
Outside Purchases Report	Monthly
Report of Interdepartmental Transfers	Monthly
Accounting Department Adjustments Report	Monthly
Supply Usage Trend Reports	
Medical and Surgical Supplies Usage	Quarterly
Pharmaceuticals Usage	Quarterly

of operating cost, reports detailing this cost category are essential. The payroll report is produced along with each payroll and is especially useful since it provides information during the time frame in which the expense is being incurred. Rather than wait until the end of the following month to receive a monthly summary (the labor distribution report), salary costs during the current month can be monitored in the current month. This gives managers a leg up time-wise in controlling their costs, assuming, of course, that they have seasonalized the salary budget into pay periods and not just monthly amounts. A second report of labor costs, the labor distribution report, is generally prepared on a monthly basis. It details the hours and wages associated with each type of pay: regular, overtime, sick, vacation, and so on. This allows managers to focus on such elements of performance as negative time use and overtime.

Finally, some organizations use a position control report as a means of controlling the hiring process. This report lists all positions along with a position or control number for each. If a numbered position is already filled, obviously, another worker cannot be hired. If a numbered position is vacant, the manager can proceed with the hiring process. If the manager wishes to pursue a new hire, but does not have a numbered, and thereby authorized, position, he or she is barred from hiring. Some love

the position control approach because it represents a higher level of control over the hiring process. Others see it as intruding into the manager's area of responsibility. The reality is probably somewhere in between. If the management staff are mature, self-discipline should be sufficient to prevent over-hiring and a position control system is superfluous. If, on the other hand, the management staff are relatively inexperienced, a properly used position control system will prevent them from making costly and long-lasting hiring mistakes.

The next set of reports deals with consumables (supplies, pharmaceuticals, linens, and outside or direct purchases—those not coming through the normal internal supply system) and provide managers with information about the biggest elements of nonlabor spending. While for most departments labor is the biggest expense, some, like the pharmacy and the ORs, spend the biggest chunk of their budgets on consumables. These reports will show both current month and year-to-date activity.

Also of value are reports listing any transfers from one department to another (interdepartmental transfers like the cost of maintenance work orders) and any adjustments to the reported data made by the accounting department (correcting a miscalculated charge or fixing a charge applied to the wrong department). Basically, department managers need to know the details of anything added to or removed from the department—much like a prudent customer questions every transaction appearing on a bank statement. These reports should be reviewed every month.

Finally, trend reports allow managers to look for patterns of spending that may prove useful in using their resources more effectively. Are purchases properly timed along with volume? Does supply consumption track with the rise and fall of service volume?

READING THE REPORTS

One challenge for managers, especially those new to the management role, is how to read the reports, that is, what numbers should be examined first, second, and so on. Even a summary performance report can contain hundreds of numbers: current month and year-to-date amounts for actual and budget, variance amounts, revenue and expenses, and so on. There is a lot to look at, and some managers suffer from a bit of overload. A systematic review of the performance report serves them best.

Generally, as seen in the simplified, six-month performance report in Figure 10.3, the department's revenues are reported at the top. This is followed by the operating expenses and then the departmental profit,

Typical Hospital
Departmental Performance Report
December 31, 20XX

CURRENT MONTH ACTUAL	CURRENT MONTH BUDGET	CURRENT MONTH VARIANCE	DESCRIPTION	YEAR-TO-DATE ACTUAL	YEAR-TO-DATE BUDGET	YEAR-TO-DATE VARIANCE
			DEPARTMENTAL REVENUE			
$ 70,000	$ 100,000	$ (30,000)	INPATIENT REVENUE	600,000	600,000	$ -
50,000	50,000	-	OUTPATIENT REVENUE	320,000	300,000	20,000
$ 120,000	$ 150,000	$ (30,000)	TOTAL PATIENT REVENUE	$ 920,000	$ 900,000	$ 20,000
			DIRECT EXPENSES			
$ 70,000	$ 70,000	$ -	SALARIES	428,000	420,000	$ (8,000.00)
10,000	10,000	-	EMPLOYEE BENEFITS	62,000	60,000	(2,000)
17,000	20,000	3,000	SUPPLIES	125,000	120,000	(5,000)
16,000	20,000	4,000	PURCHASED SERVICES	118,000	120,000	2,000
13,000	15,000	2,000	REPAIRS	88,000	90,000	2,000
4,000	5,000	1,000	OTHER EXPENSES	29,000	30,000	1,000
$ 130,000	$ 140,000	$ 10,000	TOTAL DIRECT EXPENSES	$ 850,000	$ 840,000	$ (10,000)
$ (10,000)	$ 10,000	$ (20,000)	INCOME CONTRIBUTION	$ 70,000	$ 60,000	$ 10,000

Figure 10.3
A departmental summary performance report provides managers with revenue, expense, and profit data each month.

sometimes referred to as the department's income contribution. Some reports list current month activity on the left and year-to-date on the right separated by the line descriptions. Others have the descriptors on the left and then show current month and year-to-date in the middle and right, respectively.

The most effective way to manage is to act on the basis of approximate location, direction, and pace. Managers must ask three questions: Where am I performance-wise? Where am I heading? How fast am I moving? In reviewing performance using the report depicted in Figure 10.3, the first thing to look at is the lower-right corner of the report—the six-month year-to-date variance from "bottom-line" performance. This is the approximate location: $10,000 favorable to budget. So the answer to the first question is that the location is ahead of plan and thus favorable by a significant amount. The second question, direction, is answered by looking at the corresponding variance on the current month side of the report. In this case, performance is $20,000 unfavorable. Thus, performance is favorable so far, but deteriorating. And what about movement? Performance is changing fairly rapidly. If January's performance is like that experienced in December, year-to-date performance will be unfavorable.

Once these three questions have been answered, the manager can proceed to analyze the department's performance by working up and to the left in looking at the revenues and expenses and the variances. Generically,

this question must be answered: why is the actual amount reported higher or lower than budget? With the inpatient revenue, for example, why is the revenue in December so much lower than the budget? This continues until all the significant variances are understood. (See Chapter 11 for an explanation of Variance Analysis.)

Remember to look at the budget amounts to determine not only their accuracy in terms of the amount of budget allotted to the department but also their seasonalization. If the budget is not divided into the monthly amounts properly, it can give the impression of a performance variance when none really exists. Consider, for example, the inpatient revenue as reported in Figure 10.3. The budget of $100,000 for the month is exactly one-sixth of the amount of year-to-date revenue budget, indicating that the year's budget was divided by 12 and spread evenly to all months. But is this realistic? Is it proper to assume the same amount of inpatient volume and revenue will accrue to the hospital in December, a month that typically experiences a drop in elective admissions? Perhaps the budget should have been seasonalized, with more allotted to other months and less in December. A review of past history can provide valuable insights into possible seasonal patterns, which can then be taken into account as the budget is seasonalized.

HOW TO LOOK AT THE NUMBERS

Examine the ER visit counts shown in Table 10.2. Is volume rising or falling? Is there a pattern of business? Is there a seasonal cycle? How easy is it to discern the answers to these questions?

It is virtually impossible to answer those questions merely by examining the table. Trying to "see" patterns and trends requires the mind to make over 12,000 individual comparisons—not a good use of brain power—and a potentially migraine-inducing exercise! But if this same data were displayed graphically (Figure 10.4), a clear picture would be evident. First, over the long run, volume is essentially flat at between 2,700 and 2,800 visits a month. However, in the short run from November of fiscal year 2003 until the present, there is a strong upsurge in volume. It is clear, as well, that there is a cycle to the business—down in the winter months and then back up.

Why are these trends and patterns important? If volume continues to grow, there could eventually be issues with staffing and physical plant capacity. If renovations are necessary, the winter months look to be the best time since volume is lowest and the chance for disruption would be minimized. The winter months could also be the time for staff in-service

Table 10.2
The Pattern of Emergency Room Visits

The Makebelieve Medical Center				
For the Fiscal Years Ending June 30				
	20X1	**20X2**	**20X3**	**20X4**
July	2,989	2,960	3,016	3,035
August	2,928	2,939	2,768	2,941
September	2,783	2,994	2,572	2,863
October	2,929	2,749	2,749	3,051
November	2,676	2,575	2,396	2,630
December	2,556	2,538	2,436	2,660
January	2,612	1,978	2,555	2,686
February	2,474	2,234	2,482	
March	2,977	2,626	2,614	
April	2,835	2,658	2,694	
May	2,976	2,913	2,921	
June	2,760	2,795	2,826	
Total	33,495	31,959	32,029	19,866

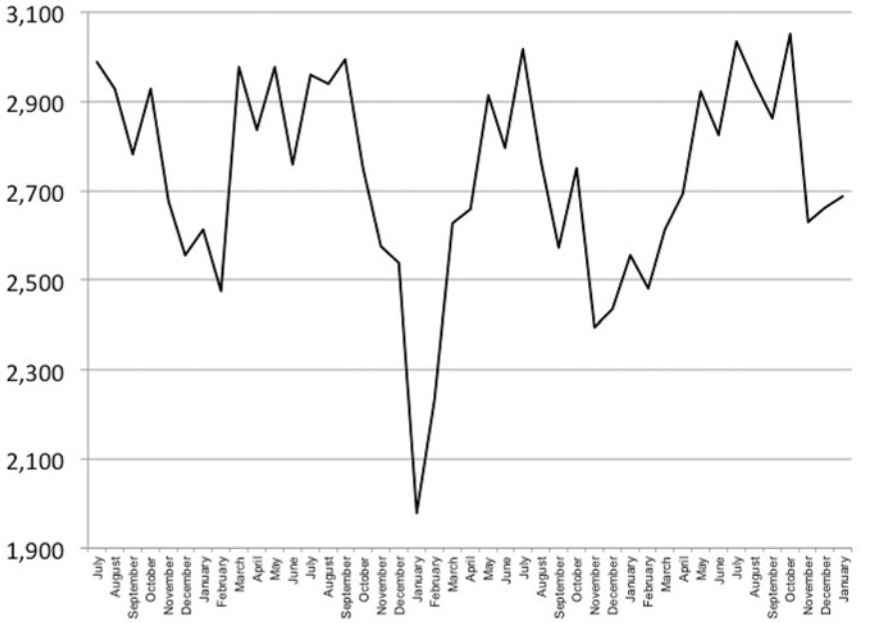

Figure 10.4
The graph allows the reviewer to visualize the up and down monthly performance over the years. This makes it easier to discern patterns and trends that are not readily evident when looking only at the data table.

programs and for recruiting in anticipation of an upswing in volume coming out of the winter months.

Clearly the data presented in Table 10.2 tell the same story, but the data itself cloud perception. The graph, on the other hand, makes patterns and trends more easily discernable. However, no graph should be presented as a single line without some other data being plotted along with it. Consider, the graphs displayed in Figure 10.5. At the top is a single-line plot of business volume. Clearly, it is rising, but is it better or worse than planned? There's really no way with this single line to tell the complete story.

The middle graph is better because there is now a qualitative aspect to the graph. Think of the straight lines as budgeted volume. If the lower line represents the budget, then the department's volume is performing better than planned. If the upper line is the budget, it is easy to see that the department is performing worse than planned. Normally, only a single line would be used to represent the budgeted amount. In this example, both are shown for the sake of simplicity. There is one situation in which two straight lines might be plotted—if one were trying to display a best-case/worst-case situation. It would be easy to see that the volume growth exceeds the worst-case estimate but has not grown as rapidly as the best-case estimate. In either situation, the graph that displays both quantitative data (actual volume) and qualitative data (budget, estimate, etc.) conveys far more information and is far more useful.

Both the top and middle graphs shown in Figure 10.5 represent graphs that are rearward focused. They answer the question: How did the organization perform? A graph containing historic information can also be used to answer the forward-focused question: How will the organization perform? This is illustrated at the bottom of the figure. Here, the graph displays the trend of volume along with a capacity line (the solid horizontal line at about 150 units of volume per month) along with a projection of volume into the near term future. As seen in the figure, demand will soon exceed capacity. If this graph was a representation of ambulatory surgery volume and the indication was that demand would exceed capacity in approximately 18 months, management would have the advance notice to modify the surgical schedule, increase the number of days the ORs are available for ambulatory cases, or even begin construction of added OR capacity. The ability to see projections like this allows management to deal proactively with various situations.

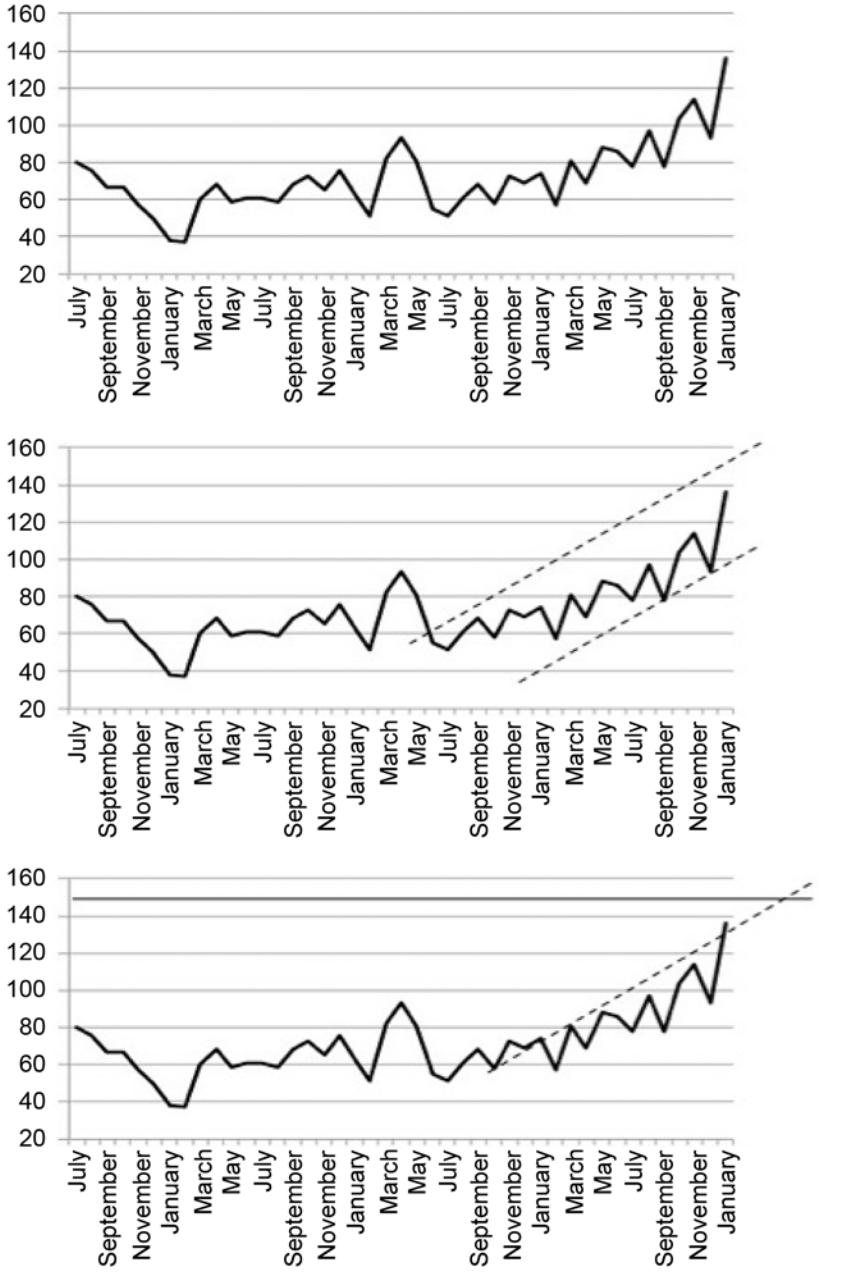

Figure 10.5
A qualitative plot line along with a quantitative line provides more information.

SOME IMPORTANT POINTS TO REMEMBER

Graphs are a simple and effective tool that helps managers to discern patterns and trends. This is because large data tables are very difficult to assimilate. It takes an inordinate amount of effort to "crack the code" so to speak and discern the message of the data. A well thought-out graph, on the other hand, immediately converts data into useable information. That's not to suggest that tabular data reports can ever be eliminated. On the contrary, they are essential to business decision making because they are the reality behind the graphs.

Graphic data presentations are easy to comprehend and can be especially useful in visualizing the future. Just as the bottom graph in Figure 10.5 provided a glimpse into the future, graphs can also make it easier for managers to make a point about overall performance. Graphs also facilitate understanding of relationships between one element of performance and another—for example, vacancies in nursing and pharmacy and medication errors. One can talk about the connection, but the ability to present a graph that displays both vacancies and errors rising and falling in sync with each other drives the point home more effectively than discussion alone.

DASHBOARDS AND BALANCED SCORECARDS

The performance dashboard or balanced scorecard is a performance measurement tool that provides a multidimensional view of where an organization is going compared to its chosen destination. It provides a record of performance over time. As part of the financial management paradigm of performance planning, performance measurement, and performance management, it is an essential tool for managing organizations.

In today's environment, managers are overloaded with performance reports. They receive report after report full of data. How effective are these reports in guiding managers? Do they provide useful information or merely mountains of data that actually obscure what is going on? To be useful, performance information needs to be available quickly and in a form that is easily understood.

While performance reports are indispensable, large tabular reports containing all manner of data are difficult to assimilate. While these tabular data reports can never be eliminated, graphic data presentations used in dashboards are far easier to comprehend. Performance reports presented in tabular form are indispensable. They provide the raw data needed for analysis and to support decision making. But to provide immediate information to be used to make "mid-course" adjustments, managers should

rely not on the performance reports but rather on performance dashboards tailored to the specific needs of the operating unit and its objectives. The current environment demands vigilance and rapid response. Poor measurement, lagged in time, improperly measured, or erroneously or inappropriately measured, can quickly lead to crisis.

THE VALUE OF THE DASHBOARDS

In the best health care accounting systems, a significant lag exists between the end of a month and the availability of the monthly performance reports. Performance in January, for instance, will not be reported until the end of February. Even then the performance that is reported may not be fully analyzed and understood until sometime late in March. As result, a performance problem that occurs in the month of January may not be fully acted upon until April at which time the performance in February and March has deteriorated as well. As depicted in Figure 10.6, the dashboard, which

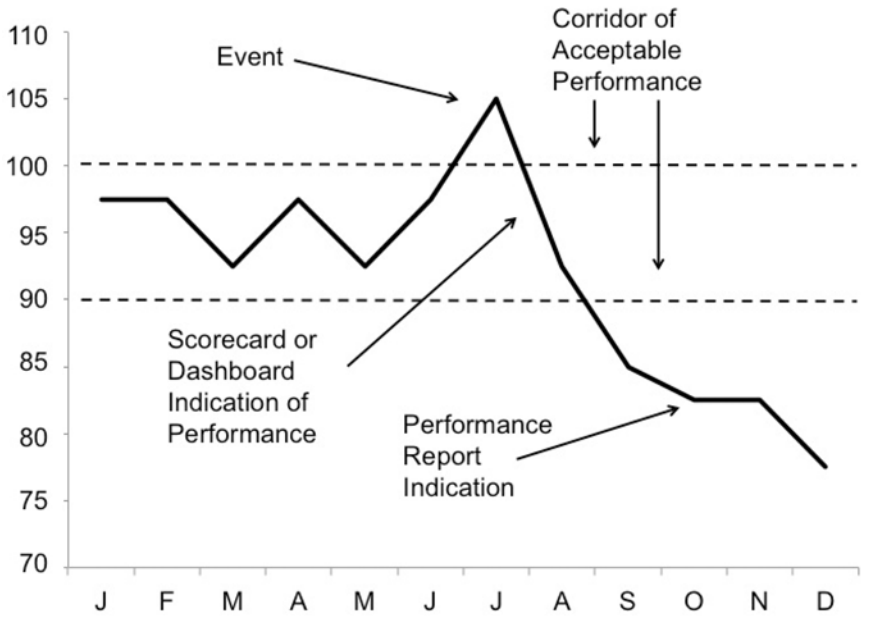

Figure 10.6
As performance deteriorates, the lag time between the performance-altering event availability of the performance report is greater than the lag time between the event and the alert provided by the dashboard. This permits management to take remedial action sooner rather than later.

reports leading performance indicators, is more likely to alert management about performance problems far earlier than the performance reports.

STRATEGIC VERSUS OPERATIONAL

In order to manage any business effectively, it is important to look at both short-term (operational) performance and the strategic or long-term needs of the business. Dashboards and scorecards can be set up in such a way that the dashboard concentrates on the operational indicators, while the balanced scorecard focuses its attention more strategically.

By focusing on the strategic direction of the organization, the balanced scorecard takes into account those factors, which are essential to the long-term success of the organization. These include its competitive positioning, the quality and efficiency of the services provided, the creativity and collaboration of its human resources, and the organization's growth. The scorecard seeks to provide leadership with information about its position in the current time frame relative to its desired position in the long term. Is the organization thriving? Is continued growth assured? Will the current way in which the organization is operating assure its strategic survivability? Is it growing over time?

By using appropriate measures for the long term, the balanced scorecard allows leadership to focus its attention on those elements of performance that can best position the organization for long-term success. Measuring and reporting on the competitive environment (market share, volume growth), the organization's financial strength (financial reserves, debt capacity), its clinical quality and satisfaction levels and reputation (use of best practice medicine, patient survey scores, staff turnover rates), and investments in staff development (individual staff certifications, group certifications like Magnet Status®[1] for nursing, staff participation in national meetings) are important to keep an organization moving in the proper long-term direction in an evolving health care environment.

Performance dashboards, on the other hand, focus attention on the short-term or operational side of the business. The dashboard is structured so that management can determine if current operations are consistent with strategic goals. Leading indicators, which tell where the organization is going, are used to supplement trailing indicators, which tell where the organization has been. The dashboard strives to be multidimensional in order to provide a richer view of performance. For example, if an important operational objective is to reduce the age of the accounts receivable, it is important to measure not only the total value or number of days in the

receivables but also the write-offs. If write-offs are increasing, the receivables will be reduced, but the organization will suffer because amounts owed to it will not be collected. For this reason, it is often necessary to use multiple metrics when examining performance—two or three elements that are interrelated or dependent on each other, such as the age of the accounts receivable (the A/R) and write-offs. Performance dashboards should contain metrics that report on both departmental performance and organizational performance.

RAPIDLY AVAILABLE, REASONABLY SOUND DATA

Whatever performance metrics are selected to populate the dashboard, they must use rapidly available and reasonably sound data and must be leading versus trailing indicators. Management relies on approximate location as opposed to GPS-style precision. As a result, it is not important to understand exactly, to the penny, the size of the deviation from the expense budget. What is important is the order of magnitude of the deviation. Is a department $200,000 overspent? Or is it merely $2,000 overspent? Time consumed to determine the exact amount of the deviation robs management of the time it needs to turn around performance. Further, as demonstrated previously, waiting for the most accurate numbers can cause performance reports to lag behind actual performance far further than necessary. A dashboard that is built around approximate data and available almost immediately is far more useful. As a result, managers should not focus their attention on absolute precision with the measures but rather their approximate value and rapid availability.

LEADING VERSUS TRAILING INDICATORS

Leading indicators of performance are far preferable to trailing indicators. Trailing indicators tell where the organization or department has been (past tense). Performance managers find more value in where the organization is going (future tense). Thus, leading indicators are far more important in populating the dashboard.

For example, consider cost per case—an appropriate measure of departmental financial performance. This measure, however, is a trailing one; it tells how the department performed in the past. More important is how well the department will do in the future. For that reason a leading indicator should be selected. Knowing that cost per case is calculated by

dividing the department's costs by the number of admissions or cases, a prudent manager would want to populate the dashboard with indicators about admissions: the raw number, admissions by the top 25 physicians, average length of stay (ALOS), and so on. Selecting measures that can give an indication of what is likely to happen with admissions (will they rise, fall, or remain fairly constant over time?) allows the manager to get out in front of the situation. In addition, the manager may wish to populate the dashboard with leading indicators of cost performance: overtime hours, monthly rate of spending, and so on. In this way, the manager can see performance issues as they begin to develop and take appropriate action before performance deteriorates.

POPULATING THE DASHBOARD

Managers are often unsure of the parameters to be included on the dashboard. What indicators should be used? Budget compliance? Income contribution? Vacancy rates? Cost per unit of service? To determine the best indicators to use, one must first answer several other questions.

First, what are the primary objectives? Considering that the role of the manager is to achieve the *organization*'s objectives and not merely the departmental or operating unit objectives, the dashboard should include measures of both operating unit and organizational performance. Managers should clearly understand what is expected at both levels. This dual set of objectives forms the basis for selecting the dashboard metrics. The evaluation of performance should be based on a combination of metrics. Keeping in mind the need to balance the clinical imperative with the financial reality, both quality measures and financial measured should populate the dashboard.

Next, once appropriate performance outcomes have been determined, what are the best indicators of this performance and how easy is it to obtain the indicators? If the desired clinical outcome is to move patients through the hospital more effectively from a clinical standpoint and thus more efficiently from a financial standpoint, it is fairly easy to choose the metrics—ALOS for clinical and cost per case for financial. But determining the proper metric to use if the desired clinical outcome is the elimination of complications from venous thromboembolisms in surgical patients may be far more difficult. Clinical complications can often occur post-discharge and be difficult, if not impossible, to quantify.

The current environment demands vigilance and rapid responsiveness. Poor measurement, lagged in time, improperly measured, or erroneously or inappropriately measured, can quickly lead to crisis.

Reports that measure the wrong parameters or measure the right ones the wrong way are useless. Consider ALOS. Hospitals measure ALOS in days. But is that the right way to measure it? A patient in a bed for 96 hours equates to a four-day stay. But what if that patient is appropriately discharged in 100 hours? That, too, is a four-day stay, but the patient has been exposed longer to the harm that is present in hospitals by about 4%—a greater risk of mistake, hospital acquired infection, and so on. In addition, the bed's capacity to be occupied by patients is reduced by the same 4%. That decrease in capacity can translate into a decrease in revenue. Consider the difference such a shift in ALOS could mean for a 100-bed hospital, as demonstrated in Table 10.3. At an average of 92 hours, a bed can accommodate 95 cases a year. At 100 hours, that same bed can accommodate only 88 cases, a difference of 7 cases. For a 100-bed hospital, that equates to 700 admissions. Assuming average net revenue per bed of just $20,000, the monetary value is $14 million. If one were to assume that because of operating inefficiencies the beds could not be immediately refilled once emptied and the potential revenue stream was discounted by 15%, the monetary value remains high (nearly $12 million)—a tidy sum for hospitals that are often cash strapped.

Table 10.3
Impact of Length of Stay on Hospital Net Revenue and Cash Flow

	92-Hour Stay	100-Hour Stay
Calendar days	365	365
Hours per day	24	24
Hours per year	8,760	8,760
Hours of stay	92	100
Maximum potential cases	95	88
Potential additional cases	7	
Average net revenue/case	$20,000	
Potential additional revenue/bed	$140,000	
Potential (assuming 15% inefficiency)	$119,000	
Impact by hospital bed size		
100 beds	$11,900,000	
200 beds	$23,800,000	
300 beds	$35,700,000	

MAKING DASHBOARDS MORE USEFUL

Once the decision has been made to develop a performance dashboard or balanced scorecard, the focus should shift to the best way to present the data. Graphs are far better than numeric indicators. As the old adage goes, "a picture is worth a thousand words." Among the best visualizations are line charts that indicate position and show trends in performance over time. They can be annotated to highlight particularly good or bad performance. Line charts are, by their very nature, simple and easy to comprehend. They can be supplemented with comparative budget data, best practice data, best-case/worse-case scenario estimates, and so on. In this way, the quantitative data being reported can be given a qualitative aspect to help put it into context. Is performance better or worse than the budget? Is the department outperforming industry averages? Has performance exceeded the expectations contained in the business proposal? The following two examples in Figure 10.7 illustrate the importance of comparative data.

The performance on the top merely conveys a sense of how busy the organization was over the course of the year. The dotted line represents actual business volume for each month of the year. It is fairly easy to see that business is growing over time. But is it the level of business and the rate of growth management should celebrate? Is the organization doing as well as expected? If a budget line is added (the solid line in the bottom graph), it is easy to judge performance. While the year started slowly, the business volume outperformed the plan in the second half of the year and, for the year as a whole, achieved a level of volume consistent with the plan.

IMPORTANT CHARACTERISTICS

When the decision to use dashboards and scorecards to convey information and guide performance has been made, it is important to keep in mind several characteristics that apply to the metrics being used, the performance being reported on, and the manner in which measurement is used in the organization.

The performance being reviewed and the outcomes to be achieved must be measurable. The late Peter Drucker, the renowned management expert, wisely observed, "If you can't measure it, you can't manage it."[2] It may sound wonderful that the principal objective of an organization is to provide a high-quality patient care, but how exactly is quality measured? Although many areas of measurability surround clinical quality,

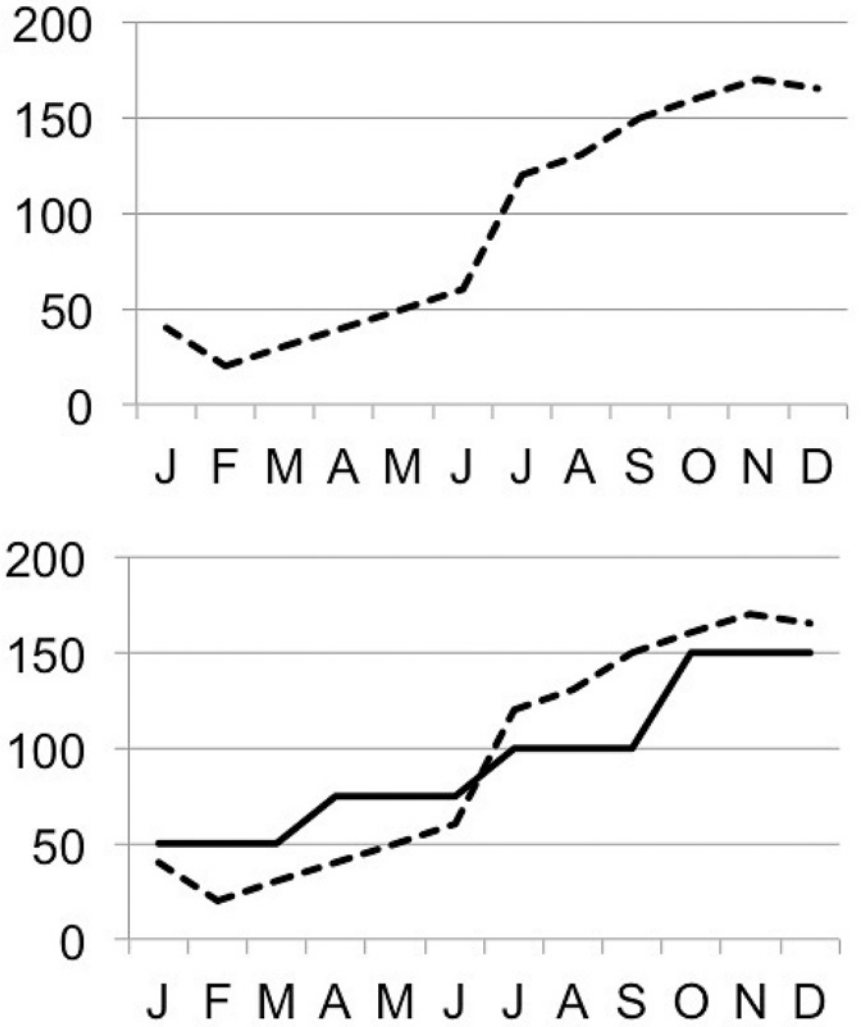

Figure 10.7
Business volume over time is easy to see with a graph. But lacking a qualitative indicator (budgeted volume), it is impossible to know if volume is consistent with the organization's plan.

including process measures, outcomes and patient satisfaction, the reality is that there is no useable measure of clinical quality. Instead, measurable surrogates for quality must be used to populate the dashboard. These can include such measures as the quantity or rate of medication errors, patient falls, and sudden and unexpected returns to the operating room.

If the dashboard is going to be used as part of an individual performance evaluation methodology, it is essential that there be agreement, in advance, about the measures to be used. A moving target is impossible for even the best managers to hit. So it is important to pick a target and stick with it for a reasonable stretch of time (likely the full fiscal year). This does not mean that the objectives or the measurements of performance cannot be changed. On the contrary, they must change in response to market conditions, changes in process, and other internal and external stimuli. They can and should be changed over time to make them more rigorous so as to require elevated levels of performance. At the same time, they should not be changed so frequently as to confuse managers.

The metrics employed should be significant. There should be a strong relationship between the data being reported and the desired outcomes (almost an if-then relationship). For example, the volume of admissions is a significant data element. If admissions decrease, bottom-line profitability reduces dramatically and rapidly. Staff overtime, while important, does not have the same if-then relationship to the bottom line. Profits can actually increase at the same time staff overtime is rising if the added overtime allows for additional volume of business. But whichever direction admissions go, profits will go with them.

Because knowing where performance is going as opposed to where it has been is so essential, leading indicators, those that are predictive of future performance results, should be used in the dashboard. Knowing how the organization or department has performed is important, but it is more important to know where the organization or department will be performing in the future. Measuring critical service vacancy rates (the number of vacancies in important positions such as nursing and pharmacy) is a leading indicator of the potential for untoward events such as patient falls and medication errors. Given the choice, it is more important to measure, for example, the vacancy rate in critical positions than it is to measure medication errors. The number of medication errors tells how many patients were injured (past tense). A high vacancy rate in critical positions is predictive of errors that likely will happen (future tense).

The measures used to populate the dashboard should be understandable. In other words, users of the data must understand how the individual values are calculated. Knowing the formula, one is able to devise a strategy to move the value in the desired direction. For instance, assume that the performance measure in the OR is cost per case. That value is determined by dividing OR cost by the number of surgical cases. If one knows that, then the efforts to improve the value will focus on either increasing

the number of surgical cases or decreasing cost. Not knowing how the measure is calculated, a manager might waste his or her time implementing inappropriate strategies that are doomed to fail.

Frequency with which data are reported should be carefully controlled. Reports that arrive too "fast and furious" can often be quite distracting. For the most part, the appropriate frequency of reporting is monthly. But for some indicators, a greater frequency is very appropriate. In the admitting office, a report of available beds that was received only once a month would be completely useless. Far better would be a report that flashes bed availability in real time much like the ticker in Times Square. Equally important, the timeliness of the dashboard can either help or hinder management. Because it is perfectly legitimate to populate dashboards with data that is merely approximately accurate as opposed to absolutely accurate, the dashboard can be assembled and published faster than the usual performance reports that it supplements. The rapid availability of such data can shorten the time between actual events and the discovery by managers, which, in turn, shortens the time interval between the event and remedial action.

Another important characteristic of the dashboard elements is that they be communicable. It is impossible for managers alone to achieve operating results. The entire staff must be involved. Because of this, it is important that the entire staff understand what is being communicated via the dashboard. For this reason, every element of the dashboard must be communicated in a way that the staff can understand it. While tables of numbers can convey data, a graphic presentation of dashboard results conveys information. The brain does not have to sort through the numbers to determine if a trend is developing; the eye can see it. The use of graphs, color-coding (the red light, green light logic of traffic signals), and other similar visualizations enhances communicability.

Figure 10.8 displays a dashboard with a mix of metrics dealing with financial and operational matters as well as clinical quality and satisfaction. Note that the data displayed in the upper dashboard must be carefully read to determine the favorable and unfavorable performance. At the bottom, however, the use of bold face and italic typefaces (bold type for unfavorable and italics for favorable) clearly indicates if the performance is good or bad for each indicator. Another approach is to use circles in much the same way that Consumer Reports[3] does in rating products it has reviewed. The best approach is to color code performance—red for unfavorable, yellow for transitional, green for good, and blue for superior performance.

		Fiscal Year 20X1				Fiscal Year 20X2			
Domain/Indicator	Target Value	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Financial									
Net Revenue per EIPA	$ 21,000	$19,000	$19,000	$19,500	$19,000	$20,000	$21,000	$21,300	$21,323
Cost per EIPA	$ 18,500	$18,200	$18,900	$18,900	$18,000	$18,505	$18,506	$17,500	$17,500
Operational									
OR Start Time Compliance	65%	50%	50%	53%	54%	56%	60%	65%	65%
Overall Productive Time Rate	85%	84%	84%	84%	83%	83%	85%	86%	86%
Clinical									
Hand Hygiene Compliance	100%	96%	96%	97%	95%	98%	95%	98%	97%
VAE per 1,000 Vent Days	0	0	1	0	2	0	0	0	0
Satisfaction									
Employee Turnover Rate	10%	12%	13%	11%	10%	9%	7.5%	8.0%	8.0%
"Excellent" Patient Satisfaction Rating	90%	90%	92%	90%	86%	86%	85%	85%	85%
EIPA = Equivalent Inpatient Admission	VAE = Ventilator-Associated Events								

		Fiscal Year 20X1				Fiscal Year 20X2			
Domain/Indicator	Target Value	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Financial									
Net Revenue per EIPA	$ 21,000	**$19,000**	**$19,000**	**$19,500**	**$19,000**	**$20,000**	$21,000	*$21,300*	*$21,323*
Cost per EIPA	$ 18,500	*$18,200*	**$18,900**	**$18,900**	*$18,000*	$18,500	$18,500	*$17,500*	*$17,500*
Operational									
OR Start Time Compliance	65%	**50%**	**50%**	**53%**	**54%**	**56%**	**60%**	65%	65%
Overall Productive Time Rate	85%	**84%**	**84%**	**84%**	**83%**	**83%**	85%	*86%*	*86%*
Clinical									
Hand Hygiene Compliance	100%	**96%**	**96%**	**97%**	**95%**	**98%**	**95%**	**98%**	**97%**
VAE per 1,000 Vent Days	0	0	**1**	0	**2**	0	0	0	0
Satisfaction									
Employee Turnover Rate	10%	**12%**	**13%**	**11%**	10%	*9%*	*7.5%*	*8.0%*	*8.0%*
"Excellent" Patient Satisfaction Rating	90%	90%	*92%*	90%	**86%**	**86%**	**85%**	**85%**	**85%**
EIPA = Equivalent Inpatient Admission	VAE = Ventilator-Associated Events								
Bold Type Indicates Unfavorable Performance /// *Italic Type* Indicates Favorable Performance									

Figure 10.8
The indicators in the top dashboard must be read carefully to determine performance compared to target. The bottom dashboard, displaying the same values, uses different typefaces to identify favorable and unfavorable performance.

Finally, the number of metrics should be limited in number. A dashboard that displays over 100 indicators is, essentially, useless because it provides too much data. It confuses. It overwhelms. A far better approach is to limit the number of measures that are being reported. A decent starting point is to suggest perhaps a dozen critical indicators. These can be segregated into clinical, satisfaction, financial, and operational. This provides a snapshot of performance that strikes a balance between the clinical side and the business side. The number of data elements can be expanded if color-coding is employed. Those data elements coded green are within performance specifications and need not be attended to, while those in red are in need of attention. In this way many more indicators can be reported without overwhelming management.

ONE FINAL CHOICE

The final step in developing a performance dashboard or balanced scorecard is to decide between accountability and improvement. Is the purpose

of developing the dashboard to hold people's feet to the fire or to improve the overall functioning of the organization? If accountability is the purpose, trailing indicators will suffice. Accountability is, after all, a rearward look at performance. But if the purpose is to improve performance, leading indicators are essential. These are the ones that tell where the organization is going, and in knowing that, one can take steps to improve performance.

But which is more important, accountability or improvement? Perhaps the most prudent approach is to develop dashboards that do both by including leading and trailing indicators that provide a sense of where the organization is going while at the same time telling where it has been.

NOTES

1. Magnet Status® is a registered trademark of the American Nurses Credentialing Center. For more information visit http://www.nursecredentialing.org/Magnet/ProgramOverview.
2. "If You Can't Measure It, You Can't Manage It!" National Computing Center, Amersham, UK http://www.ncc.co.uk/article/?articleid=15472.
3. Consumer Reports is a publication of Consumer Union.

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Chapter 11

ANALYTICAL TOOLS

Whether trying to determine the cause of a performance variance, forecast future business results, or make a decision about equipment acquisition program viability, a number of financial analytical tools are available to assist managers throughout the organization.

VARIANCE ANALYSIS

Simply stated, a variance is the difference between actual performance and planned performance. In examining performance reports, do not worry about whether actual is more or less than budget; concentrate on better or worse. If the actual amount is better than budget, the variance, regardless of how it is marked, is favorable. If the actual value is worse than budget, the variance is unfavorable. Since almost all performance reporting systems list actual, budget, and a variance amount, managers do not need to calculate the variance. Instead, their effort should be focused on understanding how a variance occurred; what was the underlying cause?

Given the manager's responsibility to control the use of resources, variance analysis is one of the most important tools a manager can use. It is the only way to understand the real cause of the variance so that appropriate action can be taken. If drug utilization is the reason pharmaceutical spending is worse than budget, the solution may lie in physician education, clinical pharmacist interaction, and so on. But if the real reason for the unfavorable variants is the price of the drugs, a different set of actions will be necessary. Guessing the cause can send the pharmacy director off in the wrong direction and yield no improvement despite a great deal of activity. Variance analysis will assist the pharmacy director in determining if the cause is price, drug utilization, or a combination of the two. Do not confuse variance reporting with variance analysis. Variance reporting

merely lists the elements that sum up to the variance, while variance analysis determines underlying cause.

TYPES OF VARIANCES

Several types of variances associated with revenues and expenses can be accounted for:

Volume variance
(Revenue) Price variance
(Service) Utilization variance
Labor rate variance
(Labor) Efficiency variance
Purchase price variance
(Supply) Usage variance

The first of these, the volume variance, applies to both revenues and expenses. The volume variance accounts for differences in either revenue or expense associated with differences in volume between actual and budget. Higher (better) volume than budgeted should mean more revenue, while less (worse) volume than planned would suggest a lower amount of revenue.

In examining revenue performance, variances can be associated either with price or utilization. A price variance occurs when the actual price differs from budget. Prices that are lower (worse) than budget result in an unfavorable variance, while prices that are higher (better) result in a favorable variance. Similarly, a utilization variance occurs when the actual service utilization differs from budget. Utilization that is lower (worse) than budget results in an unfavorable variance while utilization that is higher (better) results in a favorable variance.

Four different variances can be calculated to explain a deviation from budget in the operating expenses: two for labor costs and two for supply costs. In the labor expense category, a labor rate variance results from paying higher (worse) or lower (better) hourly rates of pay than contemplated in the budget. The labor efficiency variance is associated with the use of more (worse) or less (better) labor hours than budgeted.

In examining supply spending, a purchase price variance results from paying prices that are more (worse) or less (better) than budgeted. A supply usage variance results from supply consumption that is lower (better) or higher (worse) when compared to that which was budgeted.

WHEN TO LOOK

Many departmental performance reports list dozens and dozens of line items, and the thought of analyzing each variance can be daunting. Should every line item variance be examined using variance analysis? To answer this question, consider the performance report showing Table 11.1. A responsible manager must perform enough variance analysis to understand the underlying causes of the total variance of $151,300. The best approach to reducing the amount of analysis work is to establish a performance corridor. This approach recognizes that there will always be a few variances. Only those significant enough to fall outside of a predetermined performance corridor must be analyzed.

There are two ways to establish this corridor. The first is to base it on a dollar amount, say $500. All variances greater than $500, whether favorable or unfavorable, would be examined. Had this $500 corridor been used with the data in Table 11.1, only 8 of the 12 variances (those marked **) would be analyzed. The problem with a dollar corridor is that in some cases, it can mislead. A $500 variance against a $350,000 budget is not worth the effort, but a $500 variance against a $700-budget item should be examined.

Table 11.1
Departmental Spending for the Period Ending January 31, 20XX

	Actual	Budget	Variance	Percent Variance
Printing	$198,200	$200,000	$1,800**	0.9%
Office supplies	10,800	100,000	89,200**	89.2%++
Uniforms	19,800	20,000	200	1.0%
Books and periodicals	8,900	9,000	100	1.1%
Equipment—noncapital	28,800	3,000	(25,800)**	–860.0%++
Instruments	58,200	60,000	1,800**	3.0%
Linens	183,000	104,000	(79,000)**	–76.0%++
Chemicals	38,200	5,600	(32,600)**	–582.1%++
IV supplies	437,500	430,000	(7,500)**	–1.7%
IV solutions	92,800	93,000	200	0.2%
Stock drugs	135,600	36,200	(99,400)**	–274.6%++
Medical gasses	90,300	90,000	(300)	–0.3%
Total	$1,302,100	$1,150,800	$(151,300)	–13.1%

A better approach is to establish a percentage corridor. If a 5% corridor had been established in approaching the data in Table 11.1, five variances (those marked ++) would be analyzed. The advantage of a percentage corridor is that it establishes the limit in terms relative to the size of the budget. Thus, a $200 variance against a $900 budget, which missed the dollar cut, would now be included because it is a 22.2% variance.

As important as when to look is when not to look. Do not confuse variance analysis with simple spending analysis that merely identifies how funds were used. Although large expense amounts may yield savings, they may not involve a variance for the budget. Again, consider the data in Table 11.1 to determine why the budget is overspent by more than $150,000. The manager's time and effort should be directed at the major variances, in this case, those greater than 5% deviation from budget. The account with the greatest amount of spending (IV supplies) had very little variance, and based on a 5% corridor, it need not be examined. If, on the other hand, the manager wished to develop a corrective action plan to reduce spending on IV supplies, spending analysis may be helpful in identifying some future spending that could be deferred.

HOW TO LOOK

Two methods can be used to analyze variances. These can be used when dealing with either revenue or expense variances. One is an unsophisticated method that accounts for differing volumes as part of the explanation. The other is a sophisticated method that accounts for volume before any analysis is prepared. Using the unsophisticated method, variance analysis would resemble the following.

Case 1

Table 11.2 reports the actual and budgeted supply consumption for the first two months of the fiscal year. Actual consumption is favorable to the budget by $15,100 ($42,600 – $27,500).

A usage variance can be developed by examining the quantities of actual and planned consumption. Note that in Table 11.3 supply item 1 represents a 1,000-unit difference in consumption.

Next, a review of prices reveals that the price paid for supply item 3 was different (better); therefore, there is a purchase price variance (also referred to as a price variance) that can be accounting for, as shown in Table 11.4.

Table 11.2
Actual and Budgeted Supply Consumption

Items	Quantity	Unit Price	Total
Actual consumption			
Supply item 1	1,000	$15.00	$15,000
Supply item 2	2,000	5.25	10,500
Supply item 3	1,000	2.00	2,000
			$27,500
Planned consumption			
Supply item 1	2,000	$15.00	$30,000
Supply item 2	2,000	5.25	10,500
Supply item 3	1,000	2.10	2,100
			$42,600

Table 11.3
Usage Variance

Budgeted usage	2,000	
Actual usage	1,000	
Better usage	1,000	
Price	×$15.00	
Usage variance	$15,000	favorable

Table 11.4
Purchase Price Variance

Budgeted price	$2.10	
Actual price	2.00	
Price improvement	$0.10	
Actual usage	×1,000	
Purchase price variance	$100	favorable

Thus, the variance of $15,100 is now completely accounted for, as shown in Table 11.5, and the manager can claim to have improved performance by reducing supply consumption.

But did the manager consciously reduce consumption of supply item 1, or was volume reduced significantly and only 1,000 units needed to be consumed? In other words, was this performance caused mainly by a

Table 11.5
Combined Variances

Usage variance	$15,000 favorable
Purchase price variance	100 favorable
Total variance	$15,100 favorable

reduction in service volume? To answer these questions, one would need to prepare a more sophisticated variance analysis, one that took into account actual volume compared to budgeted volume. This sophisticated approach will be explained later in this chapter.

Case 2

Sometimes these variances may go in opposite directions (some favorable, some unfavorable), with a total of variance that may be either. Using the performance data in Table 11.6, the variance to be accounted for is ($14,900)—the parentheses indicating that the amount is unfavorable. Actual spending is worse than budget ($42,600 – $57,500) by $14,900.

Once again, the unsophisticated method will account for usage and purchase price elements, as shown in Table 11.7.

Note that this variance is shown in parentheses to indicate that it is unfavorable. Next, the purchase price variance is calculated, as shown in Table 11.8.

Thus, the variance of ($14,900) is now completely accounted for, as demonstrated in Table 11.9. The manager can claim to have improved performance by reducing supply consumption.

Note that instead of being added, the smaller amount is subtracted from the larger to arrive at the total. This is because similar variances are combined (added), and dissimilar parents are netted, with the sign of the largest (bracketed or unbracketed) carried forward to the total. In determining if a variance is favorable or unfavorable, the simplest and most accurate method is to disregard the mathematics of whether actual performance is higher or lower or more or less than planned. Instead, if the actual performance is better than budget, the variance is favorable. If the actual performance is worse than budget, the variance is unfavorable. Just remember, whether talking about revenues or expenses, better = favorable and worse = unfavorable.

Table 11.6
Actual and Budgeted Supply Consumption

Items	Quantity	Unit Price	Total
Actual consumption			
Supply item 1	3,000	$15.00	$45,000
Supply item 2	2,000	5.25	10,500
Supply item 3	1,000	2.00	2,000
			$57,500
Planned consumption			
Supply item 1	2,000	$15.00	$30,000
Supply item 2	2,000	5.25	10,500
Supply item 3	1,000	2.10	2,100
			$42,600

Table 11.7
Usage Variance

Budgeted usage	2,000	
Actual usage	3,000	
Worse usage	1,000	
Price	×$15.00	
Usage variance	($15,000)	unfavorable

Table 11.8
Purchase Price Variance

Budgeted price	$2.10	
Actual price	2.00	
Price improvement	$0.10	
Actual usage	1,000	
Purchase price variance	$100	favorable

Table 11.9
Usage and Price Variance

Supply usage variance	($15,000) unfavorable
Purchase price variance	100 favorable
Total variance	$(14,900) unfavorable

Case 3

One can also examine revenue variances using the same unsophisticated method. The revenue data is shown in Table 11.10. The inpatient revenue variance is favorable because actual revenue is better than budget by $1,000,000 and the ancillary variance is unfavorable by $500,000 because that kind of revenue is worse than budget. Because the variances are dissimilar, they are netted to arrive at a total of $500,000, which is shown in the table in parenthesis because it is unfavorable—worse than budget. The detailed accounting for this variance begins by examining the elements contributing to the inpatient revenue variance. This analysis uses a three-column format to make it easier to comprehend.

There is a favorable volume variance in inpatient revenue of $1,000,000 resulting from 400 patient days more than in the budget. The calculation is shown in Table 11.11.

The analysis would continue by examining the unfavorable ancillary revenue variance of ($500,000) and, again, breaking it down into its

Table 11.10
Actual and Budget Revenue Data

	Actual	Budget	Variance
Inpatient revenue ($)	$10,000,000	$9,000,000	$1,000,000
Outpatient revenue ($)	5,000,000	5,000,000	–
Ancillary revenue ($)	7,500,000	8,000,000	(500,000)
Total ($)	$22,500,000	$22,000,000	$500,000
Inpatient revenue data			
Patient days	4,000	3,600	400
Room and board rate ($)	$2,500.00	$2,500.00	$2,500.00
Total revenue ($)	$10,000,000	$9,000,000	$1,000,000
Ancillary revenue data			
Radiology procedures	50,000	50,000	–
Procedure rate	$105.00	$115.00	$(10.00)
Radiology revenue	$5,250,000	$5,750,000	$(500,000)
Laboratory tests	20,000	20,000	–
Test rates	$112.50	$112.50	–
Laboratory revenue	$2,250,000	$2,250,000	–
Total revenue	$7,500,000	$8,000,000	$(500,000)

Table 11.11
Utilization Variance

Actual volume	4,000 patient days
Budget volume	3,600
Better volume	400
Room and board rate	×$2,500.00
Utilization variance	$1,000,000 favorable

Table 11.12
Rate Variance

Actual rate	$105.00
Budget rate	115.00
Worse rate	($10.00) unfavorable
Procedure volume	×50,000
Rate variance	($500,000) unfavorable

Table 11.13
Total Variance

Volume variance (inpatient)	$1,000,000 favorable
Rate variance (ancillary)	(500,000) unfavorable
Total variance	$500,000 favorable

component pieces. In this case, for simplification, it is assumed that the ancillary revenue is composed of only radiology and laboratory revenue. In the "real world," there would be many more pieces: pharmacy, nuclear medicine, EKG, EEG, anesthesia, and so on.

It appears that a rate variance is involved in radiology; the plan was to charge $115 for each procedure, but actually only $105 was charged. Table 11.12 shows the calculation of the variance.

Thus, the revenue variance is accounted for, as shown in Table 11.13.

Up to this point, the unsophisticated method has been used to examine simple and straightforward variances; each variance is the result of a single cause—price, usage, and so on. Often, however, a combination of factors contributes to a variance.

Case 4

The radiology department has recorded revenue from inpatient services that is nearly 11% below the budgeted expectation (Table 11.14). In examining this situation, the manager needs to consider a number of factors that have contributed to this situation. Inpatient volume, expressed in patient days, is higher (better) than budget, and it stands to reason that radiology procedures should also be higher, but they are not. In addition, the price charged per procedure is less (worse) than planned. In this situation, three different variances are at play: volume, utilization, and price.

Using the sophisticated approach, the first step in analyzing the performance variance is to adjust the radiology budget to reflect an expectation that its departmental volume would be 10% higher—the assumption being that if inpatient days are higher, radiology volume would also be higher. The assumption is that radiology volume is 100% variable with inpatient day volume. This results in an adjusted radiology volume budget of 55,000 procedures, as seen in Table 11.15.

This volume adjustment results in a significantly larger and more unfavorable revenue variance of nearly $1.2 million. Following this volume adjustment to the budget, the variance analysis concentrates on utilization and price variance calculations, as shown in Table 11.16.

Table 11.14
Selected Inpatient and Radiology Department Data

	Actual	Budget	Variance
Patient days	11,000	10,000	1,000
Inpatient radiology procedures	49,000	50,000	(1,000)
Procedure price	$105.00	$115.00	$(10.00)
Inpatient radiology revenue	$5,145,000	$5,750,000	$(605,000)

Table 11.15
Selected Inpatient and Volume-Adjusted Radiology Department Data

	Actual	Budget	Variance
Patient days	11,000	10,000	1,000
Inpatient radiology procedures	49,000	55,000	(6,000)
Procedure price	$105.00	$115.00	$(10.00)
Inpatient radiology revenue	$5,145,000	$6,325,000	$(1,180,000)

Table 11.16
Total Variance

Utilization variance	= (49,000 – 55,000) × $105	= ($630,000)
Price variance	= ($105 – $115) × 55,000	= (550,000)
Total variance		= ($1,180,000)

Utilization variance = (actual volume – adjusted budget volume) × actual price.
Price variance = (actual price – budget price) × volume-adjusted budget volume.

Following this analysis, the manager understands the magnitude of the problem to be significant monetary deviations well in excess of what was originally thought to be the case both in radiology utilization and in procedure pricing. The manager can now begin taking corrective action. This could include examining departmental throughput, which may be the cause of the underutilization, and checking the price list to see if the proper charge per procedure is being recorded. Remedial action, if possible, can be based on what is determined by the manager's review.

Case 5

A department manager has just received the monthly performance report and notes that actual salaries are favorable to budget. Preliminary data are listed in Table 11.17.

Based on a cursory review, the manager determines that no action is needed—salaries are favorable to budget—and moves on to other issues. But is the manager safe in doing so without performing variance analysis? A look at the post-variance analysis data provided in Table 11.18 suggests otherwise.

As seen in this analysis, the situation faced by the manager is now significantly different. Instead of a favorable position, salary and wage costs have swung unfavorable to ($70,621)—an unfavorable performance of 5.2%. The analysis is prepared by first gathering seven data elements: actual and budget volume, actual and budget salaries, actual and budget payroll hours, and the variable expense factor. Once these elements are gathered, the math of the analysis can begin.

The variable expense factor represents that portion of the budget being analyzed that goes up and down with volume. It is calculated this way. The budget may contain 50 or 60 different items, maybe more. Some of them don't budge when volume goes up or down—the rental on the department photocopier is an example of a fixed expense item. Others do. In the pharmacy, for instance, some of the drugs are requisitioned out to the operating

Table 11.17
Selected Monthly Performance Report Data

Description	Actual	Budget	Variance
Salaries and wage cost	$1,420,000	$1,425,400	$5,400
Payroll hours	47,300	46,000	(1,300)

Table 11.18
Volume-Adjusted Salary Variance Analysis

Actual volume	220,000
Budgeted volume	300,000
Variable expense factor	20.0%
Volume change factor	–26.7%
Volume adjustment factor	–5.3%

Description	Actual	Budget	Variance
Salaries and wage cost	$1,420,000	$1,425,400	$5,400
Volume adjustment		(76,021)	(76,021)
Volume adjusted amounts	$1,420,000	$1,349,379	$(70,621)
Payroll hours	47,300	46,000	(1,300)
Volume adjustment		(2,453)	(2,453)
Volume-adjusted amounts	47,300	43,547	(3,753)
Labor rate	$30.02	$30.99	$0.97
Labor rate variance ([Budget labor rate – actual rate] × volume-adjusted budgeted hours)		$42,058	
Efficiency variance ([Volume-adjusted budgeted hours – actual hours] × actual labor rate)		$(112,679)	
Total variance		$(70,621)	

units based on the number of patient encounters, visits, procedures and so on. These are variable expense items. The variable expense factor is used to limit any volume adjustment to the proportion of items that actually vary with volume.

The best way to calculate the factor is to examine all of the budget items and determine which ones actually do rise and fall with volume. These are the variable ones. To do this, list all the budget items in one column, as

Table 11.19
Variable Budget Items

Budget Item	Total Budget	Variable Portion
Item 1	$10,000	$5,000
Item 2	10,000	1,000
Item 3	10,000	500
Item 4	10,000	400
Item 5	10,000	1,000
Item 6	10,000	600
Item 7	10,000	4,500
Item 8	10,000	2,000
Item 9	10,000	5,000
Item 10	10,000	–
Total	$100,000	$20,000

shown in Table 11.19. Then, in a separate column, list the amounts that vary with volume.

Divide the total of the variable portion column by the total of the total budget column. In this example, the result is 20%, the variable expense proportion. This percentage is used as the variable expense factor, meaning that 20% of the budget varies with volume. This is the only part of the budget that needs to be adjusted for volume. The other proportion (the 80%) does not need to be adjusted. Ask a colleague to check the logic because this proportion will be used for the entire budget year and cannot be changed from month to month. The proportion can be changed for the following fiscal year, but for the rest of the current fiscal year it must remain unchanged.

Having now determined the variable expense factor, the variance calculations can be made. First, the amount of change from budget the volume has experienced. This is done by subtracting the budget amount from the actual amount and dividing the result by the budget amount. Using the data from Table 11.18,

Volume Change Factor = (220,000 – 300,000) ÷ 300,000 = –26.7%.

The actual volume is less than budget by 26.7%. The budgets for salary costs and payroll hours should be reduced. Not by the entire –26.7% but rather by a lesser amount. In this case, the volume change factor will be multiplied by the variable expense factor to arrive at the volume adjustment factor. Table 11.20 shows the calculations.

Table 11.20
Volume Adjustment Factor

Actual volume	220,000
Budgeted volume	300,000
Variable expense factor	20.0%
Volume change factor	–26.7%
Volume adjustment factor	–5.3%

Volume adjustment factor = Variable expense factor × volume change factor.
Volume adjustment factor = 20% × –26.7%.
Volume adjustment factor = 5.3%.

The salary and payroll hours budgets will be reduced by 5.3%. Once that adjustment is made, the variances are called "volume-adjusted variances" because the budgets have been adjusted for volume. The budget for salaries is reduced by just over $76,000, and the budget for payroll hours is reduced by 2,453 hours. These "adjusted" amounts will next be used to calculate the labor rate and efficiency variances.

Labor rate variance	$42,058
([Budget labor rate – actual rate] × volume-adjusted budgeted hours)	
Efficiency variance	($112,679)
([Volume-adjusted budgeted hours – actual hours] × actual labor rate)	
Total variance	($70,621)

Now the manager knows what is driving the unfavorable performance. Rather than having a favorable variance of $5,400, the department faces an unfavorable variance of more than $70,000—a deviation of 5.23%. While the labor rate performance is favorable by $42,058, the unfavorable efficiency swamps the boat. Management action will focus primarily on efficiency. Have work processes changed, thus requiring more manpower than planned? Are the patients somehow different requiring more worker time with each? Has the facility been modified increasing the distances workers must travel in doing their day-to-day activities? And while the labor rate variance is favorable, it could be impacting efficiency. Are the workers less skilled and thus paid less than planned? Is the mix of high-skill/low-skill workers different? Are the workers relatively new to the organization, still in the orientation phase of employment and being paid a "probationary" rate until they have proven their capabilities? New workers

not only produce less work than longer-tenured workers but also consume some time of longer-tenured workers with whom they are "buddied" during their orientation or probationary period. It is entirely possible that the department's underlying problem may be the wrong workforce—paid less for lesser skills and working less efficiently because of it. At this point, all of this is speculation, but it is clear that the manager needs to investigate the situation and take action to remedy it as soon as possible.

In fairness to the manager, it should be noted that the labor component in this example is only 20% variable with volume. As a result, the nearly 30% drop in volume from the level originally budgeted may be too significant for the manager to deal with effectively. Can a department rid itself of a sufficient amount of salary cost to make up for a 30% drop in volume? True, some of the labor component is a variable with volume (overtime, float pool, agency use, etc.). But the vast majority of labor is a fixed expense—it does not respond quickly to downturns in volume. Firing workers, reducing scheduled hours, and other drastic measures can be used, but they are very disruptive to both the department and to the organization. Staff reduction via attrition is far less painful but takes far longer to have an impact on cost. The solution to this manager's problem may lie not in adjusting the workforce but in finding ways to increase volume up to the budget level. That may require communication to the executive level as that may be where an increase in volume may originate.

Case 6

A similar variance analysis can be performed on supply performance. In this case, the analysis takes on a horizontal display, as shown in Table 11.21. Note that here, instead of a single salary line being analyzed, a variety of supply items are listed and analyzed.

Once again, actual and budgeted volumes are used to calculate the volume change factor—in this example, volume is 10% higher (better, favorable) than budget. The variable expense factor, based on a careful review of costs, is set, in this instance, at 100%, meaning all supplies move in lock step with volume. If volume rises, so do costs. If volume falls, so do costs. The volume adjustment factor is 10% (100% × 10%), meaning that all budget lines will be increased by 10%.

Just as was done with salary variance analysis, the budgets for salary spending and payroll hours were adjusted by the volume adjustment factor, so, here, the spending budgets and usage budgets are adjusted upward by the 10% volume adjustment factor. The spending variance, which

Table 11.21
Volume-Adjusted Supply Variance Analysis

9,900	Actual volume
9,000	Budgeted volume
100.0%	Variable expense factor
10.0%	Volume change factor
10.0%	Volume adjustment factor

	Spending						Usage		
Supply Item	**Actual**	**Budget**	**Variance (Unfavorable)**	**Volume Adjustment**	**Volume-Adjusted Budget**	**Volume-Adjusted Variance**	**Actual**	**Budget**	**Variance (Unfavorable)**
Item A	$7,920	$2,625	($5,295)	$263	$2,888	($5,033)	1,760	750	(1,010)
Item B	8,576	6,972	(1,604)	697	7,669	–907	1,600	1,599	(1)
Item C	11,902	5,929	(5,973)	593	6,522	–5,380	3,480	1,524	(1,956)
Item D	740	748	8	75	823	83	400	411	11
Item E	89,100	83,164	(5,936)	8,316	91,480	2,380	450	426	(24)
Item F	1,600	2,740	1,140	274	3,014	1,414	100	180	80
Item G	2,109	2,655	546	266	2,921	812	74	93	19
Item H	8,747	8,707	(40)	871	9,578	831	350	348	(2)
Item I	2,250	2,245	(5)	225	2,470	220	30	30	–
Item J	6,120	5,792	(328)	579	6,371	251	120	114	(6)
Total	$139,064	$121,577	($17,487)	$12,158	$133,735	($5,329)			

			Unit Price			Variance		
Volume Adjustment	Volume-Adjusted Budget	Volume-Adjusted Variance	Actual	Budget	Variance (Unfavorable)	Usage Variance	Price Variance	Total Volume-Adjusted Variance
75	825	–935	$4.50	$3.50	($1.00)	($4,208)	($825)	($5,033)
160	1,759	159	5.36	4.36	(1.00)	852	(1,759)	(907)
152	1,676	–1,804	3.42	3.89	0.47	(6,169)	788	(5,380)
41	452	52	1.85	1.82	(0.03)	96	(14)	83
43	469	19	198.00	195.22	(2.78)	3,683	(1,302)	2,380
18	198	98	16.00	15.22	(0.78)	1,568	(154)	1,414
9	102	28	28.50	28.55	0.05	807	5	812
35	383	33	24.99	25.02	0.03	820	11	831
3	33	3	75.00	74.83	(0.17)	225	(6)	220
11	125	5	51.00	50.81	(0.19)	275	(24)	251
						($2,050)	($3,279)	($5,329)

originally amounted to 17,487 unfavorable, has been reduced to $5,329 of unfavorable performance after the volume adjustment to the individual supply budgets. The individual usage budgets are also adjusted upward by 10%. Because usage is budgeted on an individual item basis, there is no single amount for total volume-adjusted variance.

Continuing with the analysis, individual unit prices are calculated by dividing actual spending by actual usage to arrive at the actual unit price and by dividing budgeted spending by budgeted usage to arrive at the budgeted unit price. When these amounts are compared, the individual supply item price variances are determined. Using item A, for example, the actual unit price is $4.50, while the budgeted unit price is $3.50, thus yielding an unfavorable $1.00 per unit price variance.

The next step is to total the usage, purchase price and total variance for each supply item. The sum of these will explain the total volume-adjusted variance of $5,329. Using Line item A, the variances are calculated, as shown in Table 11.22.

At this point, the department manager knows that the original $17,487 unfavorable variance has been mitigated by a volume adjustment of $12,158, reducing the overall unfavorable variants to just $5,329. Further, the manager knows that this variance is caused by both usage ($2,050) and price ($3,279). Strategies can then be developed to attack the usage

Table 11.22
Total Volume-Adjusted Variance

Usage variance	($4,208)
Purchase price variance	(825)
Total volume-adjusted variance	($5,033)

Usage variance = (Volume-adjusted usage budget – actual usage) × actual price
Usage variance = (825 – 1,700) × $4.50
Usage variance = $4,208 unfavorable

Purchase price variance
= (budgeted unit price – actual price) × volume-adjusted usage budget
Purchase price variance = ($3.50 – $4.50) × 825
Purchase price variance = $825 unfavorable

and price problems. For usage, these may include examining the quality of the products purchased or the pattern of usage. The strategies to deal with price differences may involve the rebidding of supply contracts or contacting vendors to arrange credits for incorrectly billed amounts. The price strategies may be easier to implement than usage strategies.

One should also examine "contradictory" or offsetting variances as seen with items C and E. The performance of item C illustrates what can happen when the lowest price item is purchased. The amount saved because of low price ($788) is offset by higher consumption ($6,189). Item E illustrates what can happen when value is pursued instead of price. Here, the extra spend on a more expensive item ($1,302) was more than made up for by lower usage ($3,683). The moral of the story is, purchase wisely and look at the total product cost of the item, not just the purchase price.

SOME CAUTIONS

Exercise caution when deciding not to analyze an account that has a small variance. Not doing variance analysis in such a situation could result in a false sense of security and inappropriate management inaction. It is always possible that two variances, one strongly positive and one strongly negative, are canceling out each other. If the favorable one deteriorates over time, as often as the case in the "real world," the manager may face a sudden financial performance "surprise" and not be able to recover and achieve the budgeted result. The best approach in situations like this is to analyze these small variance accounts periodically, but less frequently than monthly. The best way to make variance analysis easier is to prepare the budget with sufficient detail. Budgeting only a single total amount for large categories like pharmaceuticals makes variance analysis virtually impossible. Insufficient detail is provided to result in any useful information. With the information gained from properly prepared variance analysis, there are three action steps for managers. The first is to communicate the facts of the situation to higher management. In this way, everyone benefits from the analysis, increasing its value to the organization. The second step is the preparation of an action plan to remedy a bad situation or take advantage of a good situation. The last step is to maintain vigilance to avoid problems as time progresses. The knowledge gained from the variance analysis should be helpful in this regard.

One question many managers ask is, by what amount can the budget be overspent?" Since the manager's principal role is to achieve the objectives of the *organization*, overspending in one department that benefits

the organization as a whole should not just be tolerated, but encouraged. Remember, with the exception of grant or appropriation budgets, a budget is a guide, not an absolute. A manager who refuses to overspend even if it costs the greater organization is not helping the organization. The question is, how much deviation is acceptable? A frank conversation with upper management can answer that question. In some organizations, a deviation of 1% or 2% may be tolerated. In some organizations and under certain circumstances, even a small deviation cannot be tolerated.

In the for-profit arena, publically traded companies have far less tolerance for deviations. Projecting that the organization will miss the bottom-line budget by two or three percentage points can trigger a profit warning to the listing market (Nasdaq, New York Stock Exchange, etc.), never a good thing for management or the company's board. Managers, therefore, must understand the level of comfort with budget deviations.

FORECASTING

In the simplest sense, a forecast is merely a prediction of the future. In a more formal way, one would define a business or financial forecast as a prediction of the future based on historical data, current operating fact, and other information. It is expressed, just as a budget is, in formal and measurable terms. Historical data provide the forecaster with an understanding of trends over time, relationships among various aspects of the business (volume and supply consumption, admissions and ancillary usage, acuity and staffing levels, etc.), and performance capabilities (both strengths and weaknesses). Just as with many other ventures, history provides a strong foundation for a forecast.

The incorporation of current operating facts provides a perspective from which to view the historical data and make a judgment regarding their relevance to the future period being forecast. Understanding the impact that current reimbursement pressures are having on historical patient utilization patterns, for instance, is necessary to achieve realism and forecasting patient volume. Sources of information that can be useful in forecasting include departmental files, organizational financial reports, formal and informal records, and professional associations outside the organization (about such marketplace matters as salary competition). Human intuition and plain old common sense play an important role as well.

Other information rounds out the series of inputs for a forecast. This input, sometimes entirely anecdotal in nature, includes such things as the ability of management to operate effectively in the period being forecasted.

This may mean a sense of management's ability to continue favorable performance, rectify or at least balance poor performance, and respond to internal and external challenges. Forecasts represent critical, upwardly directed information. They must be accurate, not conservative or protective. One manager overestimating the forecast for expenses can compromise others in the organization. Understating the forecast of bad news can delay remedial action until it is too late. As a forecaster, tell the boss what he or she needs to hear, not what he or she wants to hear. Managers who are recipients of forecasts should listen to what is being forecast, even if the message is an unpleasant one. Do not pressure subordinate managers to forecast only what they think the boss wants to hear. Do not "shoot the messenger," or the messenger will stop coming. Neither foster nor tolerate an environment in which differences cannot be dealt with openly. Finally, always list the assumptions made in developing a forecast. Forecasting is a tool that managers can use to control operations. It blends with budgeting, results reporting, and variance analysis, as depicted in Figure 11.1. Actual results and variance analysis represent significant parts of the operating

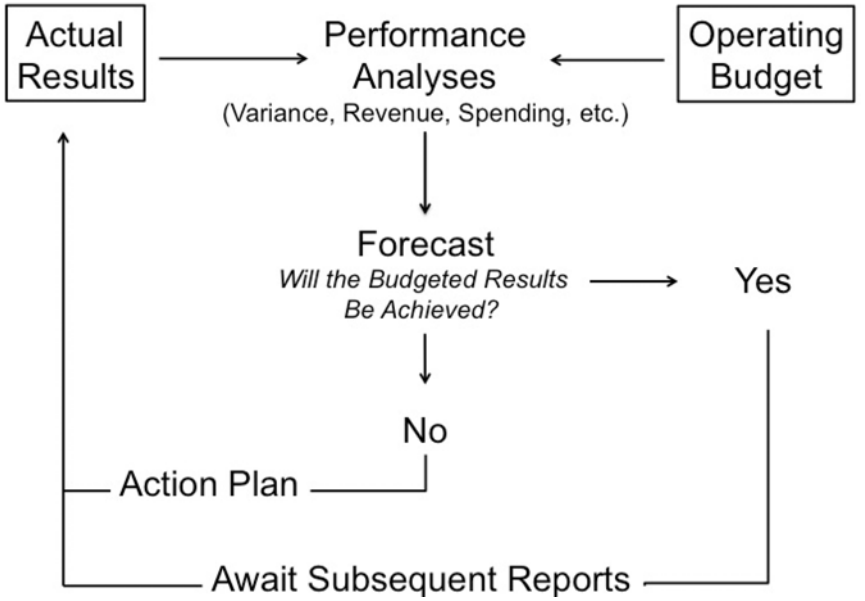

Figure 11.1
In this visualization of the cycle of management, forecasting flows from the comparison of actual and budgeted results. Once variance, spending, and any other analyses are completed, the forecast can be prepared.

facts on which forecasts are based. Depending on the results of the forecast, management action planning (to ensure management's ability to operate effectively) may be necessary.

A forecasting exercise begins with an estimation of volume—the driver of revenues and expenses. Preparing a forecast for business volume is no different from developing a budget for business volume. The same indicators and relationships are used. The difference is that while the budget is for the following fiscal year, the forecast is for the current fiscal year. It is entirely possible that the forecasted amount of volume will differ from the amount budgeted. This is because circumstances impacting volume change over time. What seemed realistic when the budget was being prepared may seem less so as the forecast is prepared and vice versa.

Often, managers at the department level will prepare only an expense forecast, leaving revenue forecasting to the finance staff. This is because revenue forecasts are based on multiple variables (volume, payer mix, collection rates, etc.) to which department managers may not have access. For those managers who do wish to forecast revenue, the process can be simplified by making a simple and reasonable assumption: that the relationship between volume and revenue experienced in the forecast's base period will remain constant. Thus, if volume in the second half of a fiscal year is expected to double, revenue will be assumed to double as well. Volume and revenue can be forecast together, as shown in Table 11.23. In this approach, volume and revenue are linked, and any assumptions about volume growth are applied to revenue.

Table 11.24 demonstrates one method of preparing an expense forecast (a summary forecast) using six-month, year-to-date financial results as a

Table 11.23
Volume and Revenue Forecast
for the 12 Months Ended June 30, 20X6

	Volume	Revenue	Revenue per Unit of Volume
Year-to-date amounts: July 1–October 31, 20X5	10,000	$1,450,000	$145.00
Forecasted amounts: November 1, 20X5–June 30, 20X6	35,000	5,075,000	145.00
Forecasted amounts: July 1, 20X5–June 30, 20X6	45,000	$6,525,000	$145.00

Table 11.24
Expense Forecast Worksheet

Based on year-to-date data as of	6/30/XX		
Description	**Fixed**	**Variable**	**Total**
Year-to-date expense	$282,000	$13,800	$295,800
Adjustments			
Add back "onetime" credits		15,000	15,000
Deduct "onetime" expenses	(12,000)		(12,000)
Adjusted total	$270,000	$28,800	$298,800
Annualization			
Divide by days/months/etc.	6		
Divide by volume		9,000	
Multiply by days/months/etc.	12		
Multiply by volume		23,000	
Annualized amounts	$540,000	$73,600	$613,600
Adjustments			
Add back "onetime" expenses	12,000		
Deduct "onetime" credits		(15,000)	
Events through year end (+/–)	74,400		
Expense forecast as of 12/31/XX	$626,400	$58,600	$685,000

Notes:

$15,000 is a maintenance contract paid in February that covers the entire year.
$12,000 is a credit received this year for supplies paid and charged to expense last year.
$74,400 is the cost this year for five new staff ($59,520 each) to be on staff for the last three months of the year.

starting point. The forecast is for the fiscal year ending on December 31. The first step is to determine just how busy the department will be: what level of volume will have been achieved when the year is completed? This volume can be patient days, procedures, patient meals, relative value units, and so on. This is important because variable expenses will be forecast using this volume estimation. Note that this is an estimate for the entire year, not just the next six months. In this case, it has been determined that the department will handle 14,000 units of service during the second six months of the year. Coupled with the 9,000 units during the first six months, the forecast is for a total of 23,000 units of service for the entire year.

The next step in preparing the forecast is to break the base period data into two components: fixed and variable. This division should be based

on the forecaster's best understanding of the spending patterns in the department.

Having done this, adjustments are made for "onetime" items. These represent events that occurred during the base period but that are not expected to be repeated during the balance of the forecast period. The first adjustment, the $15,000 onetime credit, is added back to the $13,800 of year-to-date expense. This is because this onetime credit, which had lowered the apparent expense level to $13,800, does not need to be annualized—it will not happen again in the second half of the year. Had the credit not been received, true spending would have been shown as $28,800—the correct amount for the six months being reported. The second adjustment, $12,000, represents the onetime cost of a maintenance contract that covers the entire year. It had been paid in February, and, since it will not be incurred again in the second half of the year, it should be removed from the $282,000 of fixed expenses to arrive at an adjusted amount of $270,000—the amount of recurring expense spending. At this point, the year-to-date spending amounts have been adjusted to reflect only those expenses that are likely to recur during the second half of the year.

Notes in the comments section of the worksheet describe these two items. Because they are onetime events, they should not be annualized with the other expenses. They will be placed back in the forecast at a later stage.

The data are then annualized using time and volume. The $270,000 of adjusted fixed expenses does not vary with volume but will be affected instead by time. Since $270,000 covered six months, $540,000 will be expected for the full 12-month forecast period. This is calculated by dividing $270,000 by six months and then multiplying the result by 12 months. The same logic applies to the variable expense component. The adjusted expense of $28,800 was consumed in delivering 9,000 units of service. That amounts to $3.20 per unit of service. Multiplying this by the 23,000 units of service to be provided during the entire year results in an annualized variable expense amount of $73,600.

Next, these annualized amounts must be adjusted for the onetime items that had previously been added or deducted. If an item was originally deducted, it should be added back in at this point. If it had been added, it should be deducted now. This must be done because, in the process of adjusting the base period, these onetime items were removed. They must now be replaced in the forecast data in order to be present for the one time that they will have occurred during the year. The final adjustment to the forecast takes into account events that will transpire between the date on

which the forecast was prepared and the end of the fiscal year for which it is being prepared. In Table 11.10, the notation indicates that additional staff will be hired during the second half of the fiscal year. The amount included in the forecast represents only the amount to be paid to this additional staff through the end of the forecast year and not a total annual amount.

The comment section of the forecasting worksheet should contain any other pertinent information the forecaster used. This is where assumptions should be listed along with explanations of the various onetime items and a description of the method used to estimate volume for the full fiscal.

If a manager must prepare a detailed forecast for every line item in the department performance report, the easiest way to approach the work is to copy the base period year-to-date data into an electronic spreadsheet like Excel® or Numbers® and make the calculations in the spreadsheet. If paper and pencil is the preferred approach for the forecasting exercise, cover over the current month financial data with plain white paper (a technique known as "wallpapering") and make a photocopy of the report. Adjustments, estimations, and so on can be entered in the white space for each individual line item. While this is not very sophisticated, it is a workable approach and can be helpful in getting new managers to try their hand at forecasting. It should be remembered that the best way to improve at forecasting is by preparing them. It is not a lot different from learning how to ride a bike. Trial and error, and a few skinned knees, is one of the best teachers. And once someone has learned, the skill never goes away.

DECISION ANALYSES

Managers throughout an organization are often required to make decisions and evaluate opportunities. These can involve purchasing a new piece of equipment, expanding a program, making a major change in operations, and so on. Sometimes they work independently, while at other times they are teamed with members of the finance staff. In either situation, managers should be familiar with a variety of financial analysis techniques. These can range from simple ad hoc analysis comparing supply prices to marginal profit and loss analysis to sophisticated benefit/cost analysis using a present valuation methodology. In broad terms, all of these, and many others, can be described as decision analyses tools—tools that aid the decision process by providing objective financial information to balance clinical and operational information, which may be subjective in

nature. The combination of subjective and objective data supports sound decision making.

Whether to support a business proposal or determine the soundness of an opportunity, one of the simplest techniques managers can use is marginal profit and loss analysis, sometimes referred to as a marginal P&L analysis. Essentially, this is an unofficial version of the operating statement (the P&L) that focuses only on incremental business changes associated with whatever is being examined. It contains the revenues and expenses associated with the opportunity and the resulting profit or loss. Table 11.25 shows before and after P&L information with the marginal amounts displayed in the middle column. In reality, only this middle column is needed to examine the business proposal. It does not matter that before the proposal the organization was losing money, not does it matter that after the proposal it is also losing money. What does matter is that the proposal is profitable and will improve the organization's overall financial situation.

By comparison, Table 11.26 shows a true marginal profit and loss statement that contains only the data for the opportunity being examined.

In this case, the opportunity will contribute nearly $350,000 of profit to the organization, and, assuming the opportunity is consistent with business objectives and the mission, it should be pursued. Not all opportunities, however, bear fruit in their early years. Some that could benefit the organization in the long run may be rejected if the data analyzed are just for the first year or two. For this reason, a multi-year P&L can provide a better picture of the value of an opportunity.

Table 11.25
Before and after Profit and Loss Data

	Current Situation	New Business Opportunity	Post New Business Opportunity
Net revenue from services to patients	$2,535,600	$600,500	$3,136,100
Salaries and labor cost	$2,345,656	$125,600	$2,471,256
Fringe benefits	586,414	31,400	617,814
Supplies and services	345,900	100,000	445,900
Interest expense	23,450		23,450
Depreciation	189,780		189,780
Total operating expense	$3,491,200	$257,000	$3,748,200
Profit or (loss)	$(955,600)	$343,500	$(612,100)

Table 11.26
Marginal Profit and Loss Analysis

	New Business Opportunity
Net revenue from services to patients	$600,500
Salaries and labor cost	$125,600
Fringe benefits	31,400
Supplies and services	100,000
Interest expense	–
Depreciation	–
Total operating expense	$257,000
Profit or (loss)	$343,500

Consider the following scenario. A new procedure can be offered at a price of $1,500. The collection rate is expected to be 75%. Demand for this new procedure is anticipated to be 800 units in year one, growing by 200 units each year thereafter until reaching a capacity limit of 1,600 units. Salaries are estimated to be $50,000 a year each for 10 full time equivalents and an additional 20% for fringe benefits. Each procedure consumes $400 of medical supplies. Office and other supplies needed to run the business amount to $8,000 per month. Annual rent for the treatment space is $20,000 a year. As can be seen in Table 11.27, this opportunity loses money in its first year of operation and is still unprofitable after two years. But by the third year, it is generating significant profits and, considering the organizational mission and objectives, may be worthwhile pursuing. A multi-year P&L allows decision makers to see the long-term impact of opportunities like this one and make a sound decision.

As is the case with many new ventures, this one grew its volume and revenue over several years, while the operating costs, largely fixed costs, were present from the start.

Another tool in making decisions is return on investment (ROI). This calculates the amount of return (profit) derived from an investment. The information contained in a marginal P&L can be used to calculate the ROI by dividing the average investment by the average annual return. The average investment is always half of the total investment. The logic is that the investment is worth 100% of its acquisition cost on its first day in use and worth zero on its last day. The average is halfway between these two values.

Table 11.27
Multi-Year Profit and Loss Analysis

	Year 1	Year 2	Year 3	Year 4	Year 5
Volume of business	800	1,000	1,200	1,400	1,600
Price per procedure	$1,500	$1,500	$1,500	$1,500	$1,500
Gross revenue	$1,200,000	$1,500,000	$1,800,000	$2,100,000	$2,400,000
Collection rate (%)	75%	75%	75%	75%	75%
Net revenue	$900,000	$1,125,000	$1,350,000	$1,575,000	$1,800,000
Salaries	$500,000	$500,000	$500,000	$500,000	$500,000
Fringe benefits	100,000	100,000	100,000	100,000	100,000
Medical supplies	320,000	400,000	480,000	560,000	640,000
Office and other supplies	96,000	96,000	96,000	96,000	96,000
Rent	22,000	22,000	22,000	22,000	22,000
Total expense	$1,038,000	$1,118,000	$1,198,000	$1,278,000	$1,358,000
Profit or (loss)—annual	$(138,000)	$7,000	$152,000	$297,000	$442,000
Profit or (loss)—cumulative	$(138,000)	$(131,000)	$21,000	$318,000	$760,000

Assume, for illustration purposes, that an investment of $850,000 in equipment was involved in the opportunity displayed in Table 11.27. The average investment is $425,000 (one half of the total investment) and the average annual return or profit is $152,000 ($760,000 of accumulated profits over the five years divided by five). The return on investment or ROI is 35.8% (152,000 ÷ 425,000).

Making a prudent decision to pursue a technology investment or an equipment purchase can be aided by a technique known as benefit/cost ratio analysis. This sophisticated approach uses present valuation of future flows of cash to help understand the financial situation. Essentially, the benefits to be derived, reductions in expense, for example, are compared to the investment (the cost), and a ratio is developed. Ratios greater than 1.0 suggest the opportunity has merit. Ratios less than 1.0 indicate the opportunity does not make financial sense. A ratio of exactly 1.0 means the investment decision is a toss-up. This kind of ratio analysis can be particularly beneficial when evaluating several similar opportunities or in evaluating the same kind of equipment offered by different vendors with different financial circumstances. The various opportunities can be rank ordered from highest benefit/cost ratio to lowest and for this reason the ratio is sometimes called a profitability index. As will be seen later, it can be used as part of a broader decision methodology that combines both objective and subjective determinants.

A simplified, unsophisticated benefit/cost ratio analysis is shown in Table 11.28. The investment or cost is listed at the top, followed by the benefits. The investment can be made up of four different categories. The cost of equipment comes first. Next, the costs associated with construction to accommodate the equipment and installation of the equipment. Generally, the distinction between construction and installation is that construction equates to building space to accommodate the equipment, while installation is associated with "plugging" it into existing space and infrastructure. Finally, the costs associated with any other issues or items that will be capitalized as part of the book basis of the asset are recorded. These can include onetime costs of obtaining a certificate of need, licensing fees, and zoning approvals.

In this scenario, equipment costing $9 million is to be purchased and will be paid for over two years. Construction of space to accommodate it is required along with a modest amount of installation and some fees. The benefits identified include additional revenue, a significant reduction in operating costs, and a $20,000 annual maintenance contract, the first year of which is included at no cost as is often the case.

Table 11.28
Benefit/Cost Ratio Analysis

Investment Present Value

	Equipment	Construction	Installation	Other	Total Investment
Year 0	$5,000,000	$1,600,000	$50,000	$15,000	$6,665,000
Year 1	4,000,000				4,000,000
Year 2					
Year 3					
Year 4					
Total	$9,000,000	$1,600,000	$50,000	$15,000	$10,665,000

Benefit Present Value

	Revenue Increases	Revenue Decreases	Expense Decreases	Expense Increases	Total Benefit
Year 1	$2,000,000		$300,000		$2,300,000
Year 2	2,200,000		300,000	20,000	2,480,000
Year 3	2,400,000		300,000	20,000	2,680,000
Year 4	2,600,000		300,000	20,000	2,880,000
Year 5	2,800,000		300,000	20,000	3,080,000
Total	$12,000,000		$1,500,000	$80,000	$13,420,000
			Benefit exceeds cost		$2,755,000
			Benefit/cost ratio		1.258

The analysis begins by entering the investment amounts in the proper column and year. Note that all are in the first year except for the equipment, which is to be paid over two years. The second payment is entered in the second year. The total investment or cost is nearly $10.7 million. The benefits to be derived are entered in the appropriate columns and years in the bottom portion of the analysis. First to be entered is the revenue increase. In this case, as with many opportunities, the revenues grow over time, finally hitting a plateau in the fourth and fifth years. This opportunity has no revenue decrease, although in the real world such might be the case. For example, the acquisition of a cardiac CT scanner might increase imaging volume and revenue while decreasing cath lab volume and revenue. An expense reduction of $300,000 is anticipated with this equipment and is entered in the expense decrease column. The expense

increase column is used to account for the maintenance contract. Note that the expense reduction is counter for every year. This is because once the costs are removed from the organization, the assumption is that they remain removed. The total benefit is just over $13.4 million. The benefit/cost ratio is calculated by dividing the total benefit by the total investment. This calculation yields a benefit/cost ratio of 1.258, suggesting that this opportunity returns about $1.26 for every dollar invested.

Some decision makers might stop at this point and decide to proceed with this acquisition. But is it really a wise investment? An unsophisticated analysis like this one doesn't give a full and complete picture. This is because much of the return happens in the later years. Is money received in the future equal to the money paid out up front for the equipment? The only way to know for sure is to use a sophisticated analysis that takes into account the "present value" of the future cash. To do this, one must turn to discounted cash flow analysis that revalues future cash to be expressed in today's values.

The concept of present valuation is similar to compound interest calculations but is done in reverse. While compounding takes today's values and extrapolates them to a future value, present valuing decompounds the future value to today's value. Consider a bank account with a value of $1,000 that pays 10% interest. Starting today, compounding would add 10% to the $1,000, which would then have a value of $1,100 at the end of the first year. At the end of the second year, the account would have a value of $1,210 ($1,100 + 10% = $1,100 + 110 = $1,210). In essence, the $1,000 has been compounded with 10% interest up to $1,210 over two years. So if one were asked the future value of today's $1,000, the answer would be $1,210. But what if the question was reversed and one was asked for today's value of that future $1,210? To answer this question, the $1,210 must be decompounded. To do this, one could divide the $1,210 by 10% to arrive at $1,100 and then divide again to get to the present value of $1,000. In other words, the $1,200 received in two years is worth $1,000 today. Or, using present value factors, one could multiply the $1,210 by 0.826, the present value factor for 10% in two years. The calculation is $1,210 × 0.826 = $999.46 or $1,000. The present value factors can be looked up using a present value table (Appendix 5). Simply look for the intersection of the rate (in this case 10%) and the year (two).

The present value factors are sometimes referred to as the "hurdle rate," the minimum rate of return required to proceed with a project. In some organizations, this is a minimum value, which is referred to as the required rate of return. It may be set at the interest rate at which money is borrowed

or the organization's current return on its asset base. Some organizations use a blend consisting of such rates as its current rate of return on assets, the interest rate on borrowed money, and a required rate of return. The blended rate can be weighted, giving more value or weight to certain elements and less to others, or it may be a simple average. In this approach, the hurdle rate may be calculated as shown in Table 11.29.

This rate is then used to select the present value factors, which are then used to revalue the inflows and outflows of cash to today's values. Once this is done, if the benefit/cost ratio is greater than 1.0, it means that the opportunity yields a better return than that needed to proceed with the investment. In other words, such a present-valued opportunity "clears the hurdle" and can be pursued.

It is now possible to prepare a sophisticated, present-valued benefit/cost ratio analysis (Table 11.30) to determine if the equipment investment really makes financial sense.

Two additional columns have been added to the analysis. The first is a column for the present value factors. These are the factors, as shown in Table 11.30, that will be used to decompound the future money to today's value. In this case, a rate of 7.5% is used for illustration purposes. The final additional column, at the far right of the analysis, represents the present value (today's value) of the future benefits and payouts. Multiplying the values in the total investment and total benefit columns by the present value factors yields the amounts shown. The net present value is the difference between the amount invested and the benefit. In this case that is a negative value because the present value of the benefits received in the future is less than the present value of the investment. Further, the benefit/cost ratio is less than 1.0, suggesting that this investment does not benefit the organization. In essence, it returns just $0.95 for every dollar invested.

A few rules apply to this analysis. Because benefit/cost ratio analysis is, essentially, a cash analysis, depreciation is never included in the

Table 11.29
Blended Hurdle Rate

Interest on borrowed money	4.5%
Current rate of return	6.0%
Required rate of return	7.0%
Total	19.5%
Simple average	6.5%

Table 11.30

Benefit/Cost Ratio Analysis

Investment Present Value

	Equipment	Construction	Installation	Other	Total Investment	Present Value Factors	Present Value
Year 0	$5,000,000	$1,600,000	$50,000	$15,000	$6,665,000	1.000	$6,665,000
Year 1	4,000,000				4,000,000	0.930	3,720,000
Year 2					–	0.865	–
Year 3					–	0.805	–
Year 4					–	0.749	–
Total	$9,000,000	$1,600,000	$50,000	$15,000	$10,665,000		$10,385,000

Benefit Present Value

	Revenue Increases	Revenue Decreases	Expense Decreases	Expense Increases	Total Benefit	Present Value Factors	Present Value
Year 1	$2,000,000		$300,000		$2,300,000	0.930	$1,209,302
Year 2	2,200,000		300,000	$20,000	2,480,000	0.865	2,145,200
Year 3	2,400,000		300,000	20,000	2,680,000	0.805	2,157,400
Year 4	2,600,000		300,000	20,000	2,880,000	0.749	2,157,120
Year 5	2,800,000		300,000	20,000	3,080,000	0.697	2,146,760
Total	$12,000,000	–	$1,500,000	$80,000	$13,420,000		$9,815,782
					Net present value		$(569,218)
					Benefit:cost ratio		0.945

analysis. In fact, including it will distort the analysis by using the "cost" of the equipment in both the benefit, the numerator, and the investment, the denominator. The number of years to be used in preparing the analysis should represent the amount of time the investment will be retained and not the depreciable life of the asset. If a new piece of equipment will be kept in operation for seven years, the analysis would accumulate the benefit and value it over a seven-year stretch. If the plan were to abandon the investment in three years, only three years would be used for the analysis. Care should be taken when selecting this time frame. Using either too long or too short of a time frame can distort the analysis and result in a bad decision. Lacking specific knowledge, as is almost always the case, a five-year life should be assumed. This length of time minimizes the potential for technological obsolescence and keeps the decision within the time frame of the organization's strategic plan and its long-term objectives. In numbering the years used in the analysis, the investment or cost begins with Year 0, which always has a present value factor of 1.000. This is because money paid out is considered to have been spent on the first day of the year. The rest of the years are numbered in such a way that they line up with the present value factors that apply to those years more easily. With the benefits, the years begin with Year 1 because of the conservative assumption that they accrue on the last day of the year. And, again, they will more easily line up with the appropriate present value factors by year.

Because analysis of this sort can be somewhat speculative (will expected cost reductions materialize or will anticipated revenues develop as rapidly as hoped for?), some organizations set the bar a bit higher, requiring that the benefit/cost ratio be higher than 1.0 in order to give approval. This is a form of sensitivity analysis and gives more comfort to the decision maker; providing a greater chance that the expected financial benefits will actually be achieved. Prudent managers will always look carefully at ratios that are between 0.95 and 1.05 to make sure the estimates of revenue and expense are as accurate as possible. If revenues or expenses are misstated, the 0.95 ratio might actually exceed 1.0 or the 1.05 ratio might actually be less than 1.0. In either case, a poor decision can result.

In real-world situations, a manager preparing present-valued benefit/cost ratio analysis will likely not be able to determine the proper present value factors to use without assistance from the finance department. A simple phone call can obtain the appropriate factors. That call may also serve to enlist someone from finance to assist with preparation. In this way, the manager's knowledge of the opportunity can be combined with the finance person's facility with preparing the analysis and result in a better product with enhanced credibility.

The benefit/cost ratio is sometimes referred to as the profitability ratio because of its ability to provide a single number indication of profitability of an opportunity. As such, it can be used to rank a series of opportunities and prioritize the use of scarce resources. It can also be used to assist in deciding among a number of competing proposals from different vendors of the same equipment. Consider an organization that has received pricing data from three companies, each offering a new kind of scanning technology. Each proposal is slightly different in terms of revenue and expense implications. As shown in Table 11.31, using the benefit/cost ratio as a profitability index, and assuming all three proposals achieve the stated objectives, one could opt for the proposal from SeeThru Company because of its superior financial benefit.

Conversely, if acquisition of the equipment was considered essential to achieving the organization's objectives, but none of the ratios was greater than 1.0 (Table 11.32), the organization might choose the proposal from A-1 Equipment Co. because it represents the best of the three proposals.

Some organizations also look at the payback period associated with an opportunity. This allows decision makers to get a sense of how long their investment cash will be tied up before it is paid back via the benefits derived and is then available to pursue another opportunity. Table 11.33 shows the simplified benefit/cost ratio analysis described previously. The calculation of the payback period uses the total investment and total benefit amounts.

The average payback period is calculated by dividing the total investment by the average annual benefit into the total investment amount. In this

Table 11.31
Ranking Technology Proposals

Vendor	Benefit/Cost Ratio
A-1 Equipment Co.	1.12
Zworst Scanning, Inc.	1.02
SeeThru Company	1.44

Table 11.32
Ranking Technology Proposals

Vendor	Benefit/Cost Ratio
A-1 Equipment Co.	0.973
Zworst Scanning, Inc.	0.567
SeeThru Company	0.781

Table 11.33
Simplified Benefit/Cost Ratio Analysis

Investment Present Value

	Equipment	Construction	Installation	Other	Total Investment
Year 0	$5,000,000	$1,600,000	$50,000	$15,000	$6,665,000
Year 1	4,000,000				4,000,000
Year 2					
Year 3					
Year 4					
Total	$9,000,000	$1,600,000	$50,000	$15,000	$10,665,000

Benefit Present Value

	Revenue Increases	Revenue Decreases	Expense Decreases	Expense Increases	Total Benefit
Year 1	$2,000,000		$300,000		$2,300,000
Year 2	2,200,000		300,000	$20,000	2,480,000
Year 3	2,400,000		300,000	20,000	2,680,000
Year 4	2,600,000		300,000	20,000	2,880,000
Year 5	2,800,000		300,000	20,000	3,080,000
Total	$12,000,000		$1,500,000	$80,000	$13,420,000
			Benefit exceeds cost		$2,755,000
			Benefit/cost ratio		1.258

case, the average annual benefit is $2,684,000 ($13,420,000 ÷ 5 years). The average payback period = $10,665,000 ÷ 2,684,000 = 3.97 years. In this case, the organization will have gotten back its investment case in four years and will then be able to use it again to pursue another opportunity.

The actual payback period, as shown in Table 11.34, is calculated via subtraction since it accounts for each individual year's actual cash inflow as opposed to an average.

In the fifth year, only $325,000 remains to be paid back. This represents just less than two months of year five's cash inflow. Thus, the actual payback period is 4.1 years or 4 years and 2 months. In this example, the actual payback period is longer because the flow of funds is higher in the later years. Using an average annual inflow pulls some of this later year money up to the early years and distorts the picture. Of the two, the actual payback period is the better one to use.

Table 11.34
Actual Payback Period

Original investment	$10,665,000
Year 1 cash inflow	$2,300,000
Balance to be repaid	$8,365,000
Year 2 cash inflow	$2,480,000
Balance to be repaid	$5,885,000
Year 3 cash inflow	$2,680,000
Balance to be repaid	$3,205,000
Year 4 cash inflow	$2,880,000
Balance to be repaid	$325,000
Year 5 cash inflow	$3,080,000
Balance to be repaid	$(2,755,000)

Breakeven analysis is an analytic technique used to determine the level of volume needed to reach the financial breakeven point: the point at which net revenue exactly equals cost. At the breakeven point there is neither a loss nor a profit. The breakeven point is expressed in units of volume, not dollars, and is a function of fixed cost, variable cost per unit of service, and net revenue per unit of service. The difference between net revenue per unit of service and variable cost per unit of service is also referred to as the marginal profit per unit of service. Graphically, the breakeven point is displayed in Figure 11.2.

Formula for breakeven analysis is:

$$\text{Breakeven Point} = \frac{\text{Fixed Cost}}{\text{Net Revenue per Unit} - \text{Variable Cost per Unit}}$$

An organization considering a new service line can use breakeven analysis to determine quickly if such a move is worth investigating.

An organization is considering the addition of a new radiation therapy service that will generate net revenue per treatment of $1,800. Variable costs are targeted at $300 per treatment. The fixed costs associated with the service are $1,200,000 annually. The calculation of the breakeven point would be as follows:

$$\text{Breakeven Point} = \frac{\text{Fixed Costs}}{\text{Net Revenue per Unit} - \text{Variable Cost per Unit}}$$

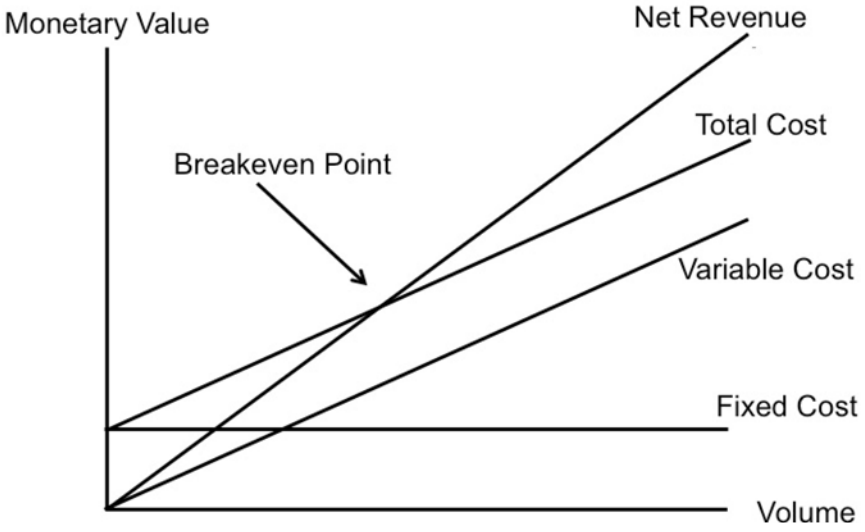

Figure 11.2
In this visual representation of the breakeven point, as volume increases, so do revenue and profits. Breakeven is located at the point where net revenue crosses the total cost line. At that point, there is no profit and no loss. Additional units of volume add revenue faster than costs increase.

$$\text{Breakeven Point} = \frac{1,200,000}{\$1,800 - \$300}$$

$$\text{Breakeven Point} = \frac{1,200,000}{\$1,500}$$

$$\text{Breakeven Point} = 800 \text{ units}$$

This means that if the organization can achieve a volume of 800 treatments, it will exactly break even with no profit and no loss. Each additional unit of service above the 800 treatments will add $1,500, the marginal profit of each, to the bottom line.

In addition to the breakeven point, decision makers should consider both the potential demand for a service and the capacity to deliver the services. If the breakeven point, for example, is 1,000 units and demand is only 900, breakeven will never be achieved. Similarly, if breakeven is 1,000 and demand is 1,500, but capacity is only 800, breakeven will not be achievable. The rule to follow is that both demand and capacity must exceed the breakeven point.

Table 11.35 shows a breakeven analysis that examines the viability of a new service for which annual demand is anticipated to be 5,000 units. The organization is able to handle 2,800 procedures per year. The business will be reimbursed by five payers covering from 5% to 50% of the patients and paying between 60% and 85% of the organization's charge for the service. The new service has annual fixed costs of $5,000,000 and variable costs of $650 per unit of service. The charge for the service is $3,000.

Table 11.35
Breakeven Analysis

Average Collection Rate

Payer	Proportion		Collection Rate	Aggregate Rate
1	5.00%	×	70.00%	= 3.50%
2	10.00%	×	80.00%	= 8.00%
3	20.00%	×	60.00%	= 12.00%
4	15.00%	×	80.00%	= 12.00%
5	50.00%	×	85.00%	= 42.50%
Total	100.00%			78.00%
Price charged per procedure				$3,000
Net revenue per procedure				$2,340
Fixed costs			$5,000,000	
Variable cost per unit			$650	

$$\text{Breakeven Point} = \frac{\text{Fixed Costs}}{\text{Net Revenue per Unit} - \text{Variable Cost per Unit}}$$

$$\text{Breakeven Point} = \frac{\$5,000,000}{\$2,340 - \$650}$$

$$\text{Breakeven Point} = \frac{\$5,000,000}{\$1,690}$$

Breakeven Point = 2,959
Capacity = 2,800
Demand = 5,000

The first step in this analysis is to calculate the average collection rate by multiplying the percentage of the business each payer covers by the percentage of the charge rate each will pay. Summing the product of these calculations yields an average aggregate collection rate of 78%. Multiplying this collection rate by the price charged per procedure yields the net revenue per procedure of $2,340. The next step is to calculate the breakeven point by dividing the $5,000,000 of associated fixed costs of the service by the net revenue per unit minus the variable cost per unit. The breakeven point is 2,959 units of service. And while demand is far more, the capacity is less thus making it impossible to achieve that breakeven point.

WORKING BACKWARD

Financial analysis tools like marginal P&L analysis, benefits/cost ratio analysis, and breakeven analysis are valuable tools in deciding if an opportunity should or should not be pursued. But what if a manager identifies a pressing need for a new technology or a new service to be provided for patients in the service area and the analysis suggests it does not provide sufficient financial return to proceed with the acquisition? In situations like this, the analysis can be worked backward to determine what changes are needed in terms of acquisition price, volume, revenue, and expenses.

To do this, start with a target. With benefit/cost ratio analysis, set the ratio at 1.0 or higher and work the formula in reverse to see what might be done to improve the benefit or lower the investment. The analysis points to several specific areas to examine for improvement. With the investment, could the price of the equipment be negotiated down or the payments to the vendor spread out over a longer period of time thereby reducing the present value of the investment? Could the amount of installation and construction costs be reduced? Could the associated fees somehow be avoided? In looking at the benefit, are there ways to improve the revenue situation by increasing the volume, raising the price, or improving the collection rate? Can the expenses, both the increases and decreases, be improved?

Similarly with marginal P&L analysis, begin with a targeted profit and examine the volume, revenue, and expense items to see how improvements could be achieved. Could staffing be reduced? Could volume growth be accelerated? Could the price be increased or the collection rate improved? In examining the results of breakeven analysis, are there ways

to improve the net revenue via negotiations with the payers or increasing the share of those payers who reimburse at higher rates? Can the amount of fixed costs and the variable costs per unit of service be lowered? Is there a way to increase capacity or demand if those values are less than breakeven?

The point is that the analysis can be helpful not only in making decisions but also in determining management actions that can transform a marginal or failing opportunity into a financial winner.

A common question managers ask is, what analysis should be used in support of an opportunity? A marginal P&L works well with almost all opportunities. Benefit/cost analysis and ROI analysis are excellent choices for equipment acquisitions. And breakeven analysis is a quick way to examine the preliminary feasibility of a new service or program. The best approach to justifying an opportunity is to combine all four, starting with the ROI and backed by a marginal P&L, a benefit/cost analysis, including the actual and average payback periods, and a breakeven analysis. This combination provides decision makers with a variety of useful information on which to base a decision.

GROSS VERSUS NET REVENUE

The impact of bills that are not fully collected is important in any decision analysis involving revenue. Hospitals and other providers typically collect less than 100¢ on the dollar. Unlike retail stores, which collect at the point of purchase, hospitals and doctors bill after a service has been rendered. This practice increases the risk of bad debts. Further, by practice and by statute (e.g., Hill-Burton), hospitals provide free care for some patients who are unable to pay and who have no insurance. Finally, the contractual adjustments for major third-party payers can be significant. Write-offs for discounts or contractual allowances, bad debts, and free or charity care reduce gross revenues substantially. The use of gross revenue in a decision analysis will result in a bad decision because it overstates the profitability of any opportunity. Consequently, only net revenue should be used.

AD HOC FINANCIAL ANALYSIS

Often, managers need to prepare what might be termed “ad hoc” financial analysis—analysis designed to pull together financial and operational data to answer a specific question or series of questions. To do this, the person

preparing the analysis must ask what the objective of the analysis is. What is to be determined? How profitable is a service line? Which approach to providing a service is more lucrative financially? What staffing model costs less or costs more? Which medications are more or less expensive? Start at the end and ask these questions. What's the objective of the analysis? What is to be determined? These questions help determine what data need to be assembled and included in the analysis; what to consider first, second, third, and so on.

The following scenario can help to illustrate this kind of analysis. The director of pharmacy is examining the cost of a new drug she is interested in adding to the hospital formulary. The medication comes in two forms, one administered intravenously (Medication A) and the other orally (Medication B). The pharmacy will pay $1.80 per dose for Medication A and $11.50 for Medication B. The pharmacy budget is already overspent and the director is looking to hold down cost. To decide which drug to add to the formulary, the pharmacy director will be preparing an ad hoc financial analysis. To prepare the analysis properly and comprehensively, she must answer two questions: What is the objective of the analysis and what is to be determined? The objective is to determine which drug will cost less. Both the cost of the drug and the cost of administrating the drug must be determined. The analysis is shown in Table 11.36.

The analysis clearly demonstrates that Medication B, even though it has a higher purchase price, costs less overall when both the drug and the cost of administration are considered. Without this analysis, the director might mistakenly jump to the conclusion that the lower-priced drug was the best choice.

Table 11.36
Pharmaceutical Cost

Description	Medication A	Medication B
Drug cost per dose	$1.80	$11.50
Administration cost per dose	15.00	4.00
Nurse intervention per dose	26.00	13.00
Total cost per dose	$42.80	$28.50
Annual doses	7,500	7,500
Annual medication cost	$321,000	$213,750

ORGANIZING THE FINANCIAL ANALYSIS

In order to be useful, financial analysis must be understandable, neat, and well organized. The true test is whether someone other than the preparer can look at the analysis and discern its message without the aid of the preparer. This means all information should be clearly labeled and the presentation of data and calculations should be in the proper sequence. To avoid confusion and clutter, summary figures (like total nursing cost) can be used if a properly referenced (e.g., "see worksheet A") supporting schedule containing the details (types and quantities of nurses, hourly rates of pay, etc.) is attached.

While the old saying that "the numbers speak for themselves" is accurate, it is always wise to accompany the financial information with a compelling narrative to support the numbers. Paint a picture of how the new equipment or technology will benefit the organization and the patients it serves. And while national data are important, the national incidence of diabetes, for example, health care is "local" and so local data are more important, particularly data from the organizations market area. If the opportunity is clinical in nature, an example or two based on real case data, but anonymized to protect patient identity, can be quite compelling. Remember, decision makers look to the data, but the presentation of personal stories and vignettes can help make the case.

The narrative should cite appropriate, accurate clinical data with appropriate references. Be careful in the use of such clinical literature as much of it often misstates the financial case. Use relevant financial literature, like *Healthcare Financial Management*, the journal of the Healthcare Financial Management Association, which carries weight with the finance department and can be effectively cited.

Finally, rather than allowing the reviewer to "find" the message, deliver the message in a tight narrative along with the data. Don't take a chance that an important point will be missed. In this regard, follow the wise counsel of Stephen Denning, author of *The Leader's Guide to Radical Management: Reinventing the Workplace for the 21st Century*, who advises, "Rather than merely advocating and counter-advocating propositional arguments, which lead to more arguments, establish credibility and authenticity through telling the stories.…"[1]

NOTE

1. Steven Denning, *The Leader's Guide to Radical Management: Reinventing the Workplace for the 21st Century*, Jossey-Bass, a Wiley Imprint, San Francisco, 2010.

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Chapter 12

IMPROVING PERFORMANCE

The resources available to health care providers have been stretched almost to the breaking point. For many years, the notion of "doing more with less" has been the rule, almost to the point of "doing everything with nothing." As a consequence, leaders and managers are challenged on a daily basis to improve clinical, operational, and financial performance and increase productivity and efficiency.

PRODUCTIVITY

Productivity is the amount of output derived from a unit or quantity of resources. At the department level, the number of laboratory tests per technician hour or the number of prescriptions filled per full time equivalent (FTE) in the pharmacy is a statement of productivity. At the organization level, the calculus is a bit more complicated. Hospital productivity, for example, is the overall output (stated in Equivalent Inpatient Admissions [EIPAs]) divided by the total resources (generally, the organization's total operating costs).

Productivity should never be confused with working harder. It is quite possible, given a lack of equipment, to work very hard but not be very productive. Often, the expression "wheel spinning" is used to describe hard work but nonproductive effort. In today's environment, working smarter equates to higher levels of productivity. To determine if productivity is high or low, managers must focus on output, not simply on whether the staff are working hard. If the staff are working hard and output is low, emphasis must be placed on improving the way they go about their jobs. Streamlining procedures, eliminating or reducing redundant tasks, and using equipment and technology to support human effort should be considered as ways to improve productivity.

The more constraints that are placed on resource availability, the more important productivity becomes. For managers seeking to "do more with less," an emphasis on improving productivity can mean the difference between success and failure. The importance of productivity is not a recent phenomenon. Historically, economic rewards accrued only to those individuals who increased their productivity. When economic rewards increased at a greater rate than productivity, the result was a decrease in the buying power of the individual's income. This is typically referred to as inflation.

From the standpoint of competition, institutions that are able to increase productivity will also increase the amount of care they can deliver for the same amount of resources. Consequently, these institutions will be able to hold costs and prices constant or perhaps even lower them. In turn, this leads to an improved competitive position.

FACTORS THAT INFLUENCE PRODUCTIVITY

A number of factors influence productivity. Among these are time, equipment and technology, staff, work process, and interruption.

- Time as an influencing factor has several dimensions. First among these is the amount of time associated with work. If a particular task takes a worker 20 minutes to perform, accepting an output level of two units per worker per hour is not productive. Similarly, pushing workers to produce four units in an hour is not only impossible but also counterproductive. A second dimension of time is scheduling—when work is performed. The sequence of work can improve or worsen productivity by requiring rework. Think of the productivity of a building contractor who erects the walls of a new home only to discover that the sheetrock needs to be removed so the electrical and plumbing lines can be installed—not very productive. A third dimension is timing, matching work (demand) to worker schedules. Figure 12.1 illustrates this concept. If too much work is demanded, staff can be rushed and become unproductive by not producing "finished" work—partially completed files, inaccurate registrations, and so on. Similarly, if too little work is provided for the level of staff, there will be unproductive or idle time.
- The second factor influencing productivity is equipment and technology. Having the right kinds of equipment to properly perform work is obvious, but so is having equipment and technology that support the worker. Does it make sense to invest in a clinical documentation system that reduces billable time for therapists by increasing the amount of

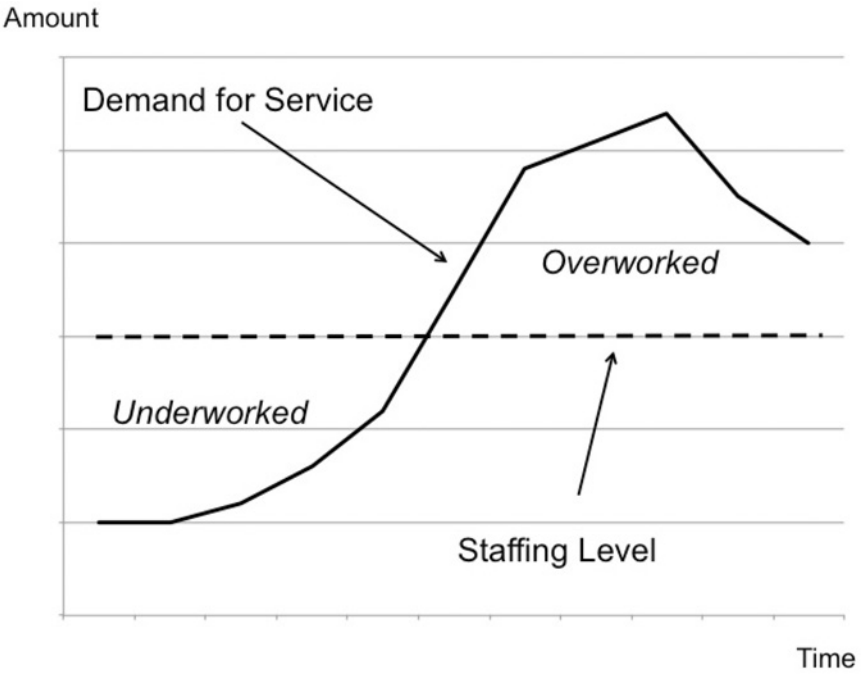

Figure 12.1
Matching work (demand) and worker schedules is essential for high levels of productivity. When supply of worker time is greater than demand, staff are underworked and unproductive. Similarly when demand is greater than staff can handle, productivity is also reduced by errors and incomplete work.

time they spend doing their documentation? Would a voice recognition system for input reduce the process time and allow them to do more billable, and thus productive, work? Just because equipment or technology is available does not mean it should be used. The impact on productivity should be examined carefully. Site visits should be arranged to include interviews with those techs currently using the equipment by those who may eventually use it. In this way, a proper determination can be made as to the effectiveness of the equipment in enhancing productivity, and a sound decision can be made.

- The staff complement of an organization has a direct bearing on the levels of productivity. It is important to have the right numbers of people with the proper skills and an appropriate mix of staff. Arguably, the most important characteristic of the staff is having the right attitude for the organization. Lillee Gelinas, MSN, RN, FAAN, system vice president and chief nursing officer at CHRISTUS Health in Dallas and the

former vice president for nursing at the Voluntary Hospitals of America, would often tell audiences to hire for attitude and train for skill. Authors like Jack Welsh and Jim Collins speak of the "right" employees in their books—employees with a "can do" attitude and a proper dedication to the mission. Thus, productivity may rest with the hiring process used by the organization. Group interviews, for example, in which a number of different employees meet with individual candidates can provide valuable insight into the attitude of the applicant. Avoid the rush to fill a vacancy with the first "qualified" candidate. Instead, be selective and get the best candidate.

- The process used in doing work is one of the biggest factors in driving productivity. This gets at the "how" of the work. The steps that are included, the location of the work, and the sequence of the various tasks all contribute to productivity. The challenge for leaders and managers is the pressure to spend less because this pressure often leads to cost reduction initiatives that do not start with process improvement. Improving process can have a positive impact on cost by reducing waste and duplication. But if cost reduction is done without the prerequisite process changes in place, the organization will fail to achieve the desired operating results. Process drives all resource consumption. It is a one-way street. Reduce resources and, at best, productivity will remain unchanged. Improve process and productivity will improve, along with better use of resources.
- Interruptions kill productivity. For health care workers such as nurses, physicians, and nurse practitioners, an interruption can have major consequences by leading to mistakes. Pagers, e-mails, texts, and cell phone calls all challenge the ability of workers to concentrate on the task at hand. Momentum is also impacted by interruptions. Did a registration clerk, being interrupted by one phone call after another, write down the patient's correct insurance information or make a transposition error? Was the patient's appointment delayed? Did cascading delays disrupt the entire clinic flow? Did the interrupted nurse grab the bottle of Procainamide HCL, an anti-arrhythmia medication, or the bottle of Probenecid, a drug used to treat gout? The bottles look identical, and if interrupted, a nurse could easily mistake one for the other. Errors reduce productivity.

Another challenge for leadership of an organization is to strike a balance between departmental productivity and organizational productivity. This means looking at the issues that drive department managers to concentrate on their own productivity without giving proper consideration to the impact on the organization as a whole. Consider the laboratory director who is challenged to reduce cost per test and increase productivity.

She has tried all the conventional methods: better reagent pricing, better instrumentation, careful examination of outside lab test costs, staffing levels by lab and shift. Still, she is challenged and her performance review and raise depend on finding a breakthrough. And so, after trying all the conventional approaches, the lab director decides on a radical approach. The lab will be operated only on the day shift, Monday through Friday—no evenings, nights, or weekends. Sure enough, the lab cost per test plummets and productivity rises, but at what cost? The lack of evening or night coverage causes emergency care to stall because there is no way to get timely diagnostic results. Clinical quality deteriorates, mortality and morbidity increase, volume and revenue decline, patient experience suffers, and physician and staff satisfaction declines. While the lab director has succeeded in improving her cost and productivity, the hospital has suffered clinically, operationally, and financially. It would be far better if the lab director were challenged to increase productivity while maintaining an appropriate level of responsiveness.

A number of issues contribute to this imbalance between departmental and organizational productivity. Many performance incentive systems reward only departmental results, not organization-wide achievements. Job descriptions focus on department-only responsibilities. Operating performance data on the movement of patients, the need for service or support is often not shared. Department managers are frequently unaware of what is happening elsewhere in the organization. It falls to leadership to orchestrate all of these highly trained, high-cost resources to obtain the proper clinical, operational, and financial results.

Tom Peters, Peter Drucker, and even the famous British admiral Sir Horatio Nelson have advised that measurement is essential to success, including the management of productivity. A reporting system is a valuable information-sharing tool so managers, workers, and others can clearly visualize what is happening to productivity. As seen in Figure 12.2, a graphic display of productivity (technician work output per hour) can be quite useful. This one shows both historical and current levels along with a comparison to competitors.

This graphic illustrates the concept of a manufacturing control chart, as well as the idea of budgeting for productivity. Setting a target, a budget focuses management attention and, if shared, worker attention as well. The control chart concept recognizes that the level of productivity is highly likely to fluctuate around the target, but is acceptable, either on the high side or on the low side, as long as it remains within the upper and lower limits, the tolerances. Year-to-date data are used to avoid rapid

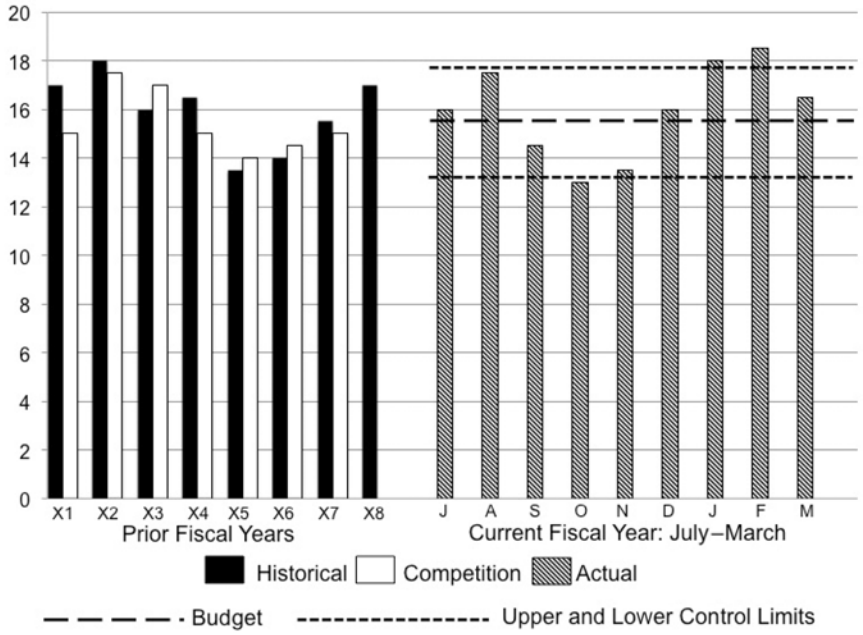

Figure 12.2
This graphic report of productivity data displays the current performance as bars on the right side with lines representing the upper and lower control limits and the budget. On the left, an historical comparison to the organization's competition is displayed.

fluctuations that accompany monthly plots. In this example, management attention would be drawn first to October and November, which are underperforming and later to January and February, which are overperforming. Both situations are worthy of attention. Of the two, however, the overperforming months may be more important to examine because of the risk of such performance inducing a significant drop-off. This is seen in the month of March, where productivity dropped by nearly 10%. Management should examine whether the rate of productivity in the two preceding months triggered the decline and whether it will be a lasting effect. An intervention of some sort may be necessary.

THE RIGHT MIND-SET

Achieving higher levels of productivity requires a certain mind-set, a certain way of thinking and approaching the challenge. A participatory

approach is preferred, one in which the manager recognizes that he or she does not have the answers but that the workers do. Involving the workers can take time; but since they are the only ones who truly understand current practices, success is not possible without their input. Managers are tied to policy and procedure manuals and may think they know how certain tasks are performed, but the workers know how work really happens. They are the ones who understand the "work-arounds" that have been developed to make things work despite what is in the formal procedure. Tapping into this knowledge is critical to success both in developing more productive ways to perform tasks and in implementing new processes.

Keeping workers working is also important to maintaining or improving productivity. At the organization level, this can take the form of day care programs for sick children. When workers are unable to drop off a sick child at the regular day care center, they occasionally call in sick themselves and stay home to care for the child. This unplanned absence can disrupt workflow and reduce productivity. Programs that keep workers on the job and on task protect productivity levels. The same can be attributed to wellness programs and employee assistance programs that reduce absenteeism and distraction.

Capital infusion, the addition of equipment and technology to support workers, can boost productivity. Communications gear, robotic delivery systems, and other investments that permit workers to concentrate their efforts on productive tasks and not worry about other, supportive, and often distracting work can increase productivity. Should nurses spend their time searching for infusion pumps and wheel chairs, or should sufficient investments be made that these are readily available?

Job responsibilities can work for or against productivity. Consider a process that consists of four discrete, sequential tasks: A, B, C, and D. Each of the four workers in the department (Workers 1, 2, 3, and 4) specializes in a specific task. Each worker is highly productive, and the department produces significant amounts of work when all four are on the job. But all four are seldom on the job at the same time because of varying schedules and amounts of vacation days, sick days, floating holidays, or personal days. As a result, while they are highly productive when all are present, overall the department's productivity suffers because on those days when any one worker is absent, no work is accomplished. The discrete task assigned to that absent worker alone is not performed. The work of the remaining three workers accumulates but is never completed. The absence of a single worker reduces total work output to zero.

At a different organization, the same process with the same four discrete, sequential tasks and the same staffing is approached in a different way. Rather than having each worker specialize in just one of the four tasks, each performs all four tasks. Overall, this department produces less total output than the first department, at least on an hourly or daily basis. But over the course of a full year, it outproduces the first department because worker absenteeism never completely shuts down productivity. It represents the old adage, "slow and steady wins the race."

A third organization may be the best performer of all. It, too, performs the same process with the same staffing level, but it uses a hybrid approach. Each worker specializes in one specific task but is trained to perform all of the tasks. In this way, the organization gets the high output productivity of the first organization but avoids its pitfalls. It also outproduces the second organization because there are significant stretches of time when its workers produce at the maximum "task specialist" rate.

Productivity measurement is often reported at the departmental level. As a consequence, problems with productivity are often seen as departmental problems. But is the problem in the department as a report indicates, or is it in the process, which may transcend departments? Perhaps the classic example is the emergency room where wait times and throughput are measured and the reports indicate that productivity is less than desirable. Is the problem in the emergency room, or is it on the floor where beds are not available to empty patients from the ER? Are the supporting services of labs, imaging, environmental services, and others preventing the ER from emptying and thus reducing throughput times? Managers should always look to make sure they are dealing with the problem (lack of support for the ER) as opposed to the symptom (long wait times in the ER).

Sound data are essential to improving productivity. Data can accurately define the problem, help identify process steps that are retarding progress, and eliminate false positives. It counters the subjective presentation, which can lead a work group in the wrong direction and arrive at a "solution" for a problem that may not exist. A surgeon, for example, wants to increase OR staffing and uses the problem of delayed cases as a convenient way to bolster the request. But a prudent manager should ask if the cases are starting late because there is insufficient staffing to turn over the rooms or because surgeons, anesthesiologists, or patients are arriving late? Data will accurately and objectively define the problem.

An improperly handled subjective presentation might look like this:

Surgeon: We need to deal with the problem of insufficient staff to turn over the rooms in the OR. It's bogging us down, Roger. It's causing cases to start late. In turn, that backs up the schedule and we either cancel cases or finish them using overtime. And you know overtime is expensive and also tiring for the staff. We are running the risk of serious mistakes being made. We need two added staff to get the rooms turned properly and quickly.

Manager: You're right. This is serious. Let me get the staff recruitment process moving along so we can get the staff we need to turn the rooms faster. I'll be back to you as soon as I can, Dr. Slicer.

A better conversation and plan of attack might look like this:

Surgeon: Roger, we need to deal with the problem of insufficient staff to turn over the rooms in the OR. It's bogging us down and causing cases to start late. In turn, that backs up the schedule and we either cancel cases or finish them using overtime. And you know overtime is expensive and also tiring for the staff. We are running the risk of serious mistakes being made. We need two added staff to get the rooms turned properly and quickly.

Manager: You're right, Dr. Slicer. This is serious. Let me gather some data so we can pinpoint the flaws in our turnover process, figure out how many more people we will need, and justify that need to the higher-ups.

The manager would then quickly gather data on room turnover times, posted start times, patient, surgeon, and anesthesia arrival times, and so on. Once collected and analyzed, that data might result in the following conversation.

Surgeon: Where are we on getting that added staff to turn the rooms quicker, Roger?

Manager: I think we've got a solution in sight, Dr. Slicer. I've proposed a solution to the chief of surgery and chairman of the OR

> Committee. We looked at the data and found that in 3% of the delayed cases room turnover was the direct cause. But in 65% the issue was late patient arrival. Late-arriving surgeons and anesthesiologists caused the remaining 32%. I've proposed an incentive system to change that behavior.

The use of hard data defined the real problem and helped the manager avoid the mistake of hiring added staff when physician behavior was at the heart of the performance problem. Good, solid data can also prevent managers from jumping to conclusions about the causes of productivity declines or ways to improve productivity.

Two of the most important areas to investigate are how work is done (the processes used) and what work is done (the process steps). Over time, even relatively simple processes have grown to include steps that may no longer be required. In other cases, processes have been expanded, but the number of workers has not. The result is process dysfunctionality, incomplete work output, mistakes, errors, omissions, and a reduction in productivity. Periodically, all processes should be reviewed to determine if the process itself should be eliminated or replaced or if steps can be eliminated, combined, or reduced.

Confusing departments with processes, falling for the subjective presentation, or jumping to (the wrong) conclusion can result in wasted resources. It can also compound the problem by causing a lack of buy-in by staff who often know what the real problem is and how to fix it. If wait times in the ER average 6.5 hours and the cause is a shortage of available inpatient beds or a lack of imaging or lab support, expanding from 20 treatment spaces to 40 will not reduce the wait time. Such a remedy will cost millions of dollars, waste valuable resources, and compound the problem.

Onetime "tweaks" to a process to remedy an immediate problem are sometimes necessary, but these are akin to fighting small building fires when the solution is to fireproof the building. Rather, a continuous approach (the same thing that spawned the term "continuous quality improvement") should be employed. Figure 12.3 illustrates this approach.

For those processes that on analysis are not performing as expected, an action plan is developed to remedy the situation. If remedial action is not needed, a further inquiry follows. Should the work process still be modified for improvement, even though it is as productive as expected? If further modification is desired, an action plan to drive the implementation will also be needed. For example, if clinic registration has been taking 15

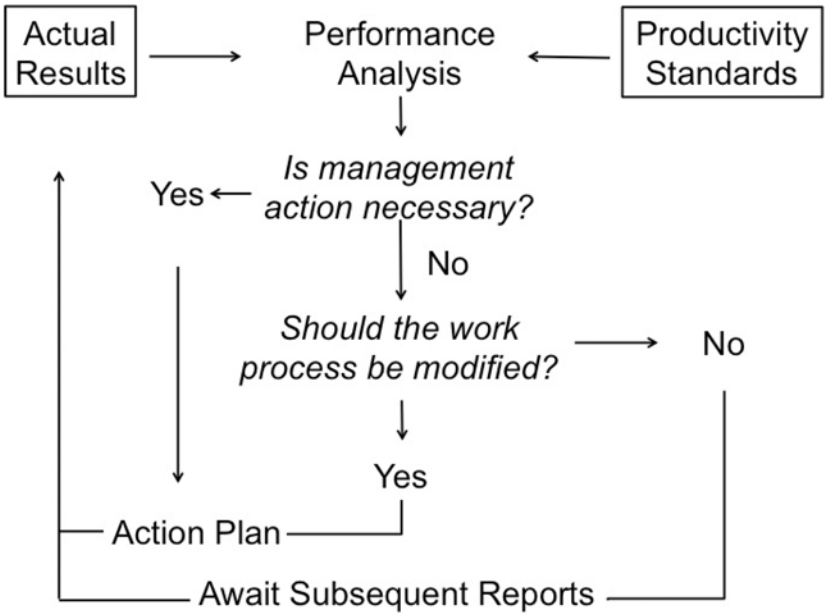

Figure 12.3
Actual results are compared to productivity standards and analyzed. The driving force is the notion of continuous improvement—even for those processes that are performing as expected.

minutes compared to a standard of 10, an action plan would need to be developed to remedy this process delay. If nothing were done, productivity would drop from an average of six registrations per hour per clerk to just four. On the other hand, if the registrations were averaging the predetermined 10 minutes, nothing need be done. In the name of continuous improvement, the responsible manager might still look to see if the process could be quickened to perhaps eight minutes while still achieving the level of accuracy and customer service. If it were possible to drive the process to eight minutes, productivity could be increased to 7.5 per hour per clerk, a 25% improvement.

When deviations from productivity standards or historic levels are identified, managers should attempt to determine what is currently happening, as well as what was happening when productivity was at an acceptable level. A side-by-side analysis can help identify where in the process the changes occurred. In Table 12.1, the process time has slipped significantly from 30 minutes to 40 minutes. Productivity has nose-dived by 33 percent

Table 12.1
Total Process Time

Process Action	Prior Time Average (Minutes)	Current Time Average (Minutes)
Step 1	4	6
Step 2	4	5
Step 3	3	6
Step 4	4	4
Step 5	2	2
Step 6	3	3
Step 7	5	5
Step 8	5	9
Total	30	40

from the prior average. Limiting the review to just the total times is not really helpful. But if the comparison can include the time for each step in the process, it becomes obvious that the early steps, Steps 1, 2, 3, and 8, represent the source of the problem. If these steps can be fixed, the lost productivity can be recaptured.

It might also be possible to look at cause and effect to see if any triggering events can be identified as the cause of the drop-off in productivity. As seen in Figure 12.4, productivity had been running at around 100 units of output per FTE for some time. Then, productivity spiked and almost immediately crashed to where it now is running at less than 80 units of output per FTE. Because of the graphic display, it is possible to note the cause, which occurred about seven months into the year. Now the manager can concentrate on identifying what happened in the seventh month and determining if its impact can be reversed. If not, how can that impact be mitigated so as to return to the previous level of productivity?

Sometimes, achieving increases in productivity requires a change in orientation. Rather than look for how to reduce the amount of time to complete a process or task, state a reduced target and challenge those involved with the process to achieve it. For example, rather than asking a group how to reduce the time to admit a patient from 1-1/2 hours, challenge the group to make it happen in 45 minutes. In this way, the urgency of the initiative is laid out so all can see. Further, asking how the time can be shortened is not likely to produce the desired results. The various process owners are likely to defend their parts of the process. The 45-minute target may be arbitrary,

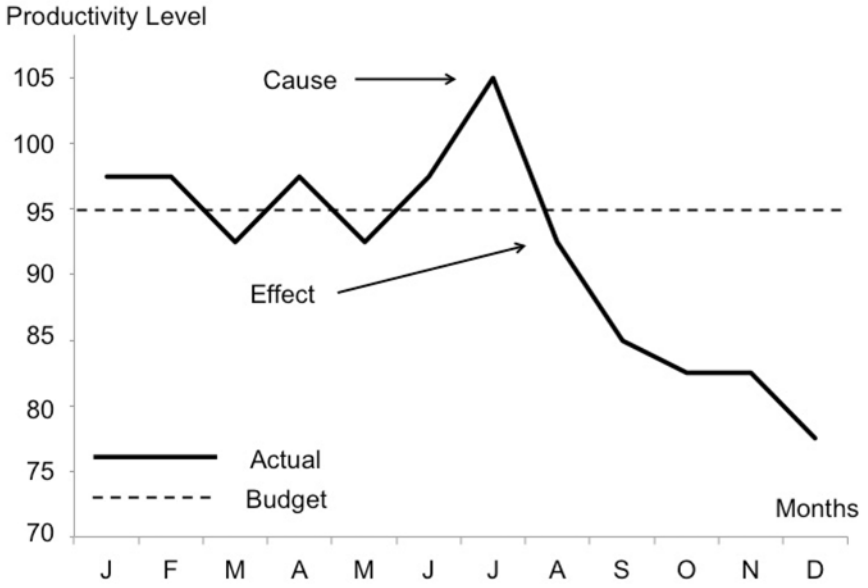

Figure 12.4
An event happening in the seventh month of the year has resulted in a sharp decline in productivity.

but it serves to pull back from the current 1-1/2 hours. Care must be given to make sure to relax the target if circumstances require it. If the group can only reduce 30 minutes from the process time and movement beyond that point has legitimately stalled, relax the target. A significant improvement has still been achieved—a new process time of only 60 minutes, a one-third reduction. This approach is applicable to both operational and clinical processes. While shortening the time for some clinical activities can be harmful to patient care and safety, all clinical activities are surrounded by operational activities that may be suitable for modification, thus achieving a reduced overall process time.

A number of useful tools are available to assist in this effort. Benchmarking against others can provide insights into performance improvement opportunities in terms of price, cost, quality, productivity, and so on. Bilateral performance mapping can identify underperforming departments and help prioritize improvement efforts. Process analysis can identify inefficiencies in throughput that can lead to improved responsiveness, customer and provider satisfaction, and increased capacity. Developing

resource use standards can make sure limited resources are maximized. All of these can lead to improved efficiency and productivity.

In looking to improve productivity, it is possible to look at several generic approaches on both the work output and the resource input sides of the coin. Focusing workers on their "A Jobs" is fine, but are there "B Jobs" that, while important, are not essential? Could these jobs be taken care of during downtimes? This is not to say workers should be doing "busy work" to fill the idle time. In a hospital laboratory, downtime on the night shift might be filled by processing referral lab work from physician practices. In this way, the lab output (tests) rises while the resource consumption (FTEs) does not.

Check to see if the current work output has somehow changed over time. "Process creep," the one-at-a-time addition of more and more elements to a process, makes for a fundamentally different process and lower productivity. Patient registrations that originally began with the basics of "name, rank, and serial number" may have been expanded to ask about pain, nutritional status, depression, and so on. No single addition to the process is problematic, but the cumulative effect can slow throughput.

Changes in acuity, patient types, and disease prevalence can impact productivity. A higher proportion of immunosuppressed patients will require more gowning and masking time for staff. A 75- or 80-year-old patient will require more time to understand treatment options than a 25-year-old. A census shift from an 80/20 med/surg mix to a 50/50 mix may result in the same output of cases but require more staff input.

Modifications to staffing (resource input) should be examined, including both additions to and subtractions from the existing staffing level. Having too many staff members might actually prevent work from being done. Sometimes, reducing staff can actually boost worker output. This is especially true with disruptive staff members.

The same staff numbers may be required but with different skill sets. A nursing unit may still require 60 full-time equivalent nurses, but the kinds of patients now being treated might require more nurses at higher-skill levels and fewer nurses at lower-skill levels. In some circumstances, higher-skilled nurses can actually produce more work output. The same number of FTEs is involved, but the productivity rate increases. The mix of fixed and variable staffing should be matched to the workload. Workload that changes frequently may be best served by variable staff who work and are paid only when they are needed.

Investments in staff retraining and skills refreshing programs can make the staff more effective in producing work. An organization that spends

millions of dollars on new scanning technology will also spend the money needed for preventive maintenance services to keep the equipment on line and producing. Considering the importance of skilled health care workers and the significant amounts spent to hire and retain them, a similar "preventive maintenance" approach for staff development would be a wise investment. Other industries spend significantly on staff development, while health care organizations spend comparatively little.

Equipping workers with supportive technologies, dedicated communication devices, robotic assist devices, and so on can be a "force multiplier," to borrow a military term. Information technology can also provide a boost to productivity by improving situational awareness to avoid inefficiencies and eliminate unnecessary gaps in the care process. Barcoding and radiofrequency tags can help with patient location, inventory management, supply usage patterns, and equipment tracking. In essence, "smart" workers are better workers.

Managers should not waste their time and effort dealing with situations and investigating possible modifications over which they have no control. These should be communicated up the organization chart so that those at a higher level can deal with the situation. For example, the manager of the orthopedics clinic may be experiencing problems with the scheduling system but not be able to do anything to remedy the situation. The director of outpatient services who sits at a higher level in the organization may be able to fix the problem if informed about it. Managers' time and effort, however, should be spent dealing with matters over which they do have control. Collaboration with other managers both upstream and downstream from their departments can boost productivity for all concerned. The productivity in the post anesthesia care unit (PACU), for instance, may be directly influenced by activities in the surgical intensive care unit. In turn, the general inpatient units may affect productivity in the intensive care unit. Because health care is a process and not an individual, isolated encounter business, this communication and collaboration among the various departments is essential to smooth operations.

BENCHMARKING

Benchmarking has been around for a fairly long time. Robert Camp introduced it at Xerox back in the late 1970s. What Camp envisioned was the use of benchmarking to look at how others use different methods, practices, and so on. "Benchmarking is the activity of learning, exchanging,

and adapting best practices to your organization. Benchmarking is finding and implementing best practices."[1]

Several different types of benchmarking can be performed.

- Internal benchmarking can be used within an organization to compare departments. For example, one med/surg nursing unit can be compared to others to understand spending levels, staffing patterns, and so on. One office location of a large, multisite physician practice can be compared with another location.
- Functional benchmarking compares organizations, departments, and processes within the same industry segment: hospital laboratories compared to other hospital laboratories, one endoscopy center compared to others, and so on.
- Competitive benchmarking may be the most important. It compares an organization to its competitors to see if any competitive advantage can be gained from learning how the competitors operate.
- Group benchmarking is based on learning networks in which a number of organizations come together around specific initiatives (e.g., reducing ventilator-associated pneumonia is in the intensive care unit setting) and examine each other's ways of providing care for ventilated patients.
- Finally, generic benchmarking can be used for those processes, which transcend a particular industry segment. For example, the admitting function at the hospital can be compared with the similar check-in process at hotels. In both settings, people arrive in search of a room, a comfortable bed, room amenities, and attentive service. Certainly the patient arriving to be admitted is also looking for quality patient care, but the core of the process, getting the patient from the waiting room to a patient room, is quite similar to the process used at a hotel.

Benchmarking can be applied to clinical practices in order to improve quality and patient safety, applied to operational or financial practices in order to more efficiently use resources and staff, and applied to customer service in order to improve the patient experience.

Once a particular process has been identified for benchmarking, the first step is to understand that process. This does not involve reading the procedure manual but rather experiencing the process personally from start to finish. If the process of scheduling a case in the operating room is to be examined, one first must try to book a case to see how that process actually works. With this knowledge in hand, it is then possible to look at comparative data to see how others go about the process of booking a case. The data used for comparison purposes can be obtained from consulting firms, from associations like the Medical Group Management

Association and the American Hospital Association, and from private data repositories.

The benchmarking organization's process is then matched up against the comparison data to see where there are differences and to learn from these differences. Once the information is gathered about the comparison groups' methods, practices, and processes, these can be adopted or adapted for the benchmarking organization and then implemented.

Because all processes within a health care organization are fundamentally interconnected, any review of clinical, operational, or financial practices must be looked at from all three perspectives. Changes in clinical practice can have financial implications, and similarly, a change in an operational practice or process can impact clinical care. Caution should be taken to avoid tunnel vision.

Table 12.2 demonstrates a functional benchmarking of the physician recruitment process at a provider organization. The benchmarking organization's concern is that it is taking too long to recruit new physicians. A comparison can be made against the industry average, but a better comparison might be to look at the best practice organization. If adoption of the best practice approach is possible, the benchmarking organization can reduce the recruitment time from over six months to a month and a half. This improvement can result in additional volume and revenue for the organization by getting the necessary resource, a new physician, on board sooner.

Using this approach, the benchmarking organization will become as good as the best organization. But is that totally satisfying? Or would the benchmarking organization prefer to be the clear-cut leader by trimming even more time from its recruitment time? If yes, a slightly different approach is needed—a comparison to a series of high-performing

Table 12.2
Comparative Physician Recruitment Times (all times in days)

	Benchmarking Organization	Industry Average	Best Organization
Candidate response to initial contact	12	7	1
Initial contact to prescreen interview	22	14	7
Prescreen to site visit(s)	59	42	21
Site visit to offer	21	14	2
Offer to signing	79	56	14
Total	193	133	45

Table 12.3
Comparison of Clinic Throughput Process Times

	Steps in Throughput Process							
	Number 1	**Number 2**	**Number 3**	**Number 4**	**Number 5**	**Number 6**	**Number 7**	**Total**
Organization A	35	15	10	20	10	19	1	110
Organization B	30	10	10	25	15	20	2	112
Organization C	25	20	5	30	15	18	2	115
Organization D	40	5	12	18	15	15	2	107
Organization E	35	15	15	10	30	20	2	127
Organization F	35	10	25	15	25	15	2	127
Organization G	20	25	10	15	10	15	2	97
Organization H	35	10	5	15	10	20	2	97
Organization I	40	25	10	30	5	28	2	140
Organization J	35	10	10	25	12	24	2	118
A-1 Care Center	35	10	5	18	30	15	1	114
Hypothetical	G	D	A-1	E	I	A-1	A-1	
Best Process	20	5	5	10	5	15	1	61
A-1's New Process	25	5	10	10	15	15	1	81

organizations and the development of a hypothetical "best" with which to compare. Table 12.3 shows such a comparative approach.

Consider the situation of a retinal clinic, the A-1 Care Center, that wants to improve throughput in order to improve its capacity (and thus its volume and revenue), its provider productivity, and its customer satisfaction scores which surveys indicate are declining because of the sluggish pace in the clinic. To do this, the center compares its process to 10 other high-performing retinal clinics around the county.

The total throughput time at A-1 averages 114 minutes—nearly 2 hours. If it compares itself to the best, it might be able to get to 97 minutes (Organizations G and H) and reduce throughput time by just over 15 minutes. But if A-1 wants to be the very best at patient throughput, it will need to compare to an even better organization none of which exist. So A-1 has developed a hypothetical best process organization with a throughput time of just one hour. If it can get to this level, it can improve its current process by 53 minutes—a substantial improvement.

The hypothetical best process is developed by examining the amount of time and the underlying process associated with each step in the process. After aligning the A-1 process steps with the comparison organizations, it selects the best organization for each step based on time. In Table 12.3, Organization G is best at Step 1 and Organization D is best for Step 2. This continues across the table, with the best organization's time for each step listed as best process. In several cases, A-1's own time is the best, and it makes no sense to select another organization. But before adapting its process to the 61-minute mark, A-1 must consider the characteristics of its patients and providers and any other circumstances unique to its organization. Then, a new process can be developed based on the comparative information and its unique circumstances. When this is done, a new total time for A-1's new process is 81 minutes. This represents an improvement of 30 minutes compared to its current 114-minute time, an improvement of nearly 30%. The implication is clear. If it can reduce its process throughput time by nearly 30%, that can convert into the potential for 30% more capacity, 30% more volume, and 30% more revenue. In addition, provider satisfaction and patient satisfaction will likely be improved.

In choosing the appropriate times for each step, A-1 may decide that, given the kinds of patients seen at the center, it should take 25 minutes for Step 1 in the process as opposed to Organization G's 20 minutes. Similarly, it may decide to double the amount of time spent on Step 3 by extending its own time to 10 minutes. In this way, the new process is uniquely tailored to the A-1 Care Center, its staff, and its patients.

Benchmarking is a valuable tool in improving process, cost performance, productivity, and so on. But caution should be taken when using it. Make sure that the comparisons are valid. Are the organizations used in the comparison group similar enough to the benchmarking organization? It would be imprudent to compare a 200-bed community hospital to a group of more than 500-bed academic medical centers. The size, complexity, and patient demographics of these institutions are too disparate. Make comparisons to several different kinds of groups: best practice organizations, similar institutions, which would likely have similar systemic issues, and competitors. Examine the characteristics of the comparison organizations carefully: their size, complexity, patient demographics, and underlying organizational culture. Any one of these can invalidate the comparison and can lead the benchmarking organization to become dysfunctional. One size does not fit all when it comes to process. While there is a pressing need to be more productive, more cost-efficient, and so on, resist the urge to jump at the first opportunity to improve. Do not blindly adopt some other organization's processes. Rather, look for appropriate processes to emulate. Finally, as demonstrated in Table 12.3, becoming the best practice organization requires a more rigorous comparison than merely comparing with the current best practice organization. It requires the development of a hypothetical organization that combines the best of each of the comparison organizations and results in a hypothetical target that is better than any other. Striving to achieve this hypothetical target can help an organization become the very best.

BILATERAL PERFORMANCE MAPPING

Bilateral performance mapping is a useful tool for making an objective determination of which departments within an organization might be valid targets for improvements in productivity, cost, throughput, pricing, and so on. The mapping process begins by benchmarking individual department performances against those same departments in other organizations and also by comparing those departments to themselves in a prior accounting period.

The mapping process begins by assembling comparative data. Table 12.4 presents the productivity data for a series of departments at Best Care Hospital. Each department is compared to the corresponding department at a number of other organizations. As with benchmarking, this comparison can be done using best practices organizations, similar organizations, and competitors.

Table 12.4
Comparative Departmental Performance Data
Productivity Comparison

	Admitting	Labs	Radiology	Nursing Unit 1	Nursing Unit 2	Nursing Unit 3	Environmental Services	Dietary
	Admissions per FTE	Lab Tests per FTE	Tests per FTE	Patient Days per FTE	Patient Days per FTE	Patient Days per FTE	Sq. Ft. per FTE	Meals per FTE
Organization A	1,533	80,763	7,692	4,978	5,100	4,729	4,881	4,978
Organization B	1,504	117,598	11,200	4,567	4,679	4,339	3,352	3,977
Organization C	1,051	95,409	9,087	3,997	4,095	3,797	1,886	4,892
Organization D	4,009	140,393	13,371	5,012	5,135	4,761	2,996	2,604
Organization E	2,531	84,810	8,077	4,897	5,017	4,652	2,535	2,289
Organization F	2,872	103,019	9,811	5,100	5,225	4,845	2,388	2,117
Organization G	2,151	35,120	3,345	4,889	5,009	4,645	2,493	6,180
Organization H	2,743	176,680	16,827	4,810	4,928	4,570	922	8,068
Organization I	1,731	134,969	12,854	5,001	5,124	4,751	4,588	3,719
Organization J	2,352	99,442	9,471	4,799	4,917	4,559	2,451	7,753
Group average	2,248	106,820	10,173	4,805	4,923	4,565	2,849	4,658
Best Care Hospital	2,133	97,100	10,346	4,901	4,430	4,793	3,080	4,425
Difference—amount	(115)	(9,720)	173	96	(493)	228	231	(233)
Difference—percentage	–5.1	–9.1	1.7	2.0	–10.0	5.0	8.1	–5.0
Prior period amount	2,163	90,158	9,863	4,941	4,516	4,846	3,215	4,170
Difference—amount	(30)	6,942	483	(40)	(86)	(53)	(135)	255
Difference—percentage	–1.4	7.1	4.7	–0.8	–1.9	–1.1	–4.4	5.8

Once the raw data are collected, a comparison can be made to the group average. The difference between Best Care Hospital and the average of the group is recorded. The difference between each department's current performance and its prior period performance is also recorded. These values are also converted into percentage differences. Negative values represent unfavorable comparisons. Comparing departments to their prior performance is best done on a quarterly basis.

Using the admitting department to explain the calculations, data from 10 organizations, Organization A through Organization J, are gathered. In this instance the group average is 2,248 admissions per FTE. Best Care Hospital's admissions per FTE value is 2,133, a negative difference of 115 units of work or 5.1% unfavorable. The department produced 2,163 admissions per FTE in the prior period, a drop of 30 since the last time the data were reviewed, and a 1.4% deterioration. Similar calculations are made for the labs, imaging, several nursing units, environmental services, and dietary.

As the data at the bottom of Table 12.4 show, the admitting department performance was 1.5% worse than the average of the comparison group and 1.4% worse than it had been. In the lab, performance is 9.1% worse than the comparison group average and 7.1% better than it had been. These values continue across the table. Some departments are favorable when compared to the group, and some are favorable when compared to themselves in a prior period. The environmental services department, for example, is 8.1% better than the comparison group average, but 4.4% better than it had been. These percentage values are used to plot the individual department locations on the bilateral performance map. As displayed in Figure 12.5, this is similar to the way locations on a city street map are plotted using alphanumeric references. (Note: all locations are approximate.)

The vertical axis represents position relative to the comparison group. Better positions are at the top and worse positions at the bottom. The horizontal divider represents a zero difference and divides the axis into better (top) and worse (bottom). The horizontal axis represents the departments' positions relative to themselves the last time they were measured. The vertical divider segregates those departments. Those that have improved are on the right, while those that have declined are on the left side of the performance map.

Based on their comparative performance, Admitting and Nursing 2 are positioned in the lower left quadrant—worse than the comparison group

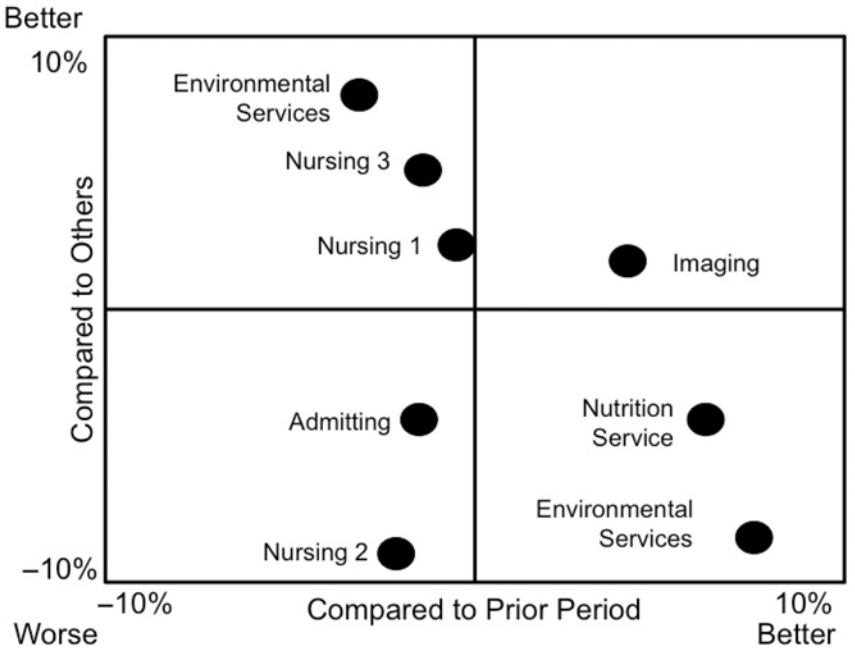

Figure 12.5
Departments are positioned on the Bilateral Performance Map based on their relative position compared to the comparison group and their own past performance.

average and worse than their own previous performance. Departments in this quadrant are the ones in need of immediate attention. Note that Imaging is positioned in the upper right quadrant—better than the comparison group average and better than their previous performance. Departments in this quadrant are the organization's best performers. The upper left quadrant represents those departments that are better than the comparison group but that are not doing as well as they had in the past. This is the second group to get the attention of management. This is because, while they are better than the comparison group, their performance has been deteriorating. The lower right quadrant is for those departments that are worse than the comparison group but improving compared to their own performance in the past. This is the third group to get the attention of management. The performance of these departments is worse than the comparison group, but their performance has been improving. The attention of management can be delayed as they continue to improve. The departments in the upper

right quadrant, those doing well in both comparisons, have the potential to be internal consultants. Their performance is superior and they understand the culture of the organization—an essential in improving performance.

Added rigor can be obtained, as seen in Figure 12.6, by simply moving the vertical and horizontal dividers to enlarge the lower left quadrant to include more departments for management review. This makes it more difficult for departments to avoid scrutiny. It is also possible to increase the rigor by comparing performance to the very best departments of the comparison group rather than just the average of the comparison group.

Consider three broad categories from which to select comparison organizations. The first is the best practices organizations—the ones generally agreed to be the best of the bunch. It is this group that can pull the comparing organization to higher levels of performance. Similar organizations are good to use for comparison because they are likely to have the same systemic issues to deal with in terms of size, location, economies of scale, and so on. Finally, do not forget about comparisons to the competition, which

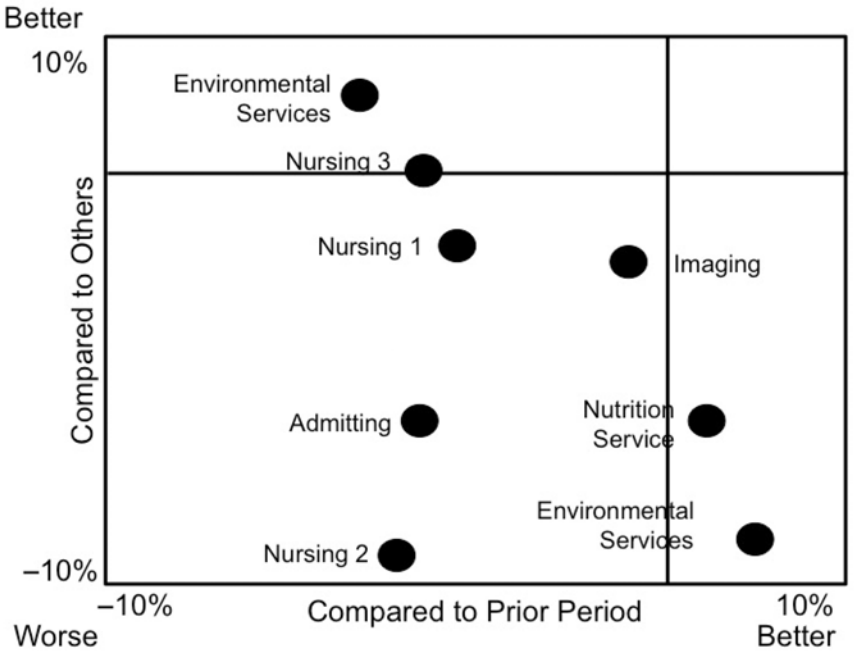

Figure 12.6
Moving the dividing lines up and to the right increases the number of departments subject to management review.

could take volume away from the organization doing the comparison. If that happens, revenue will drop and, since costs are largely fixed, profits will drop as well. Remember that losing volume in a high fixed-cost environment can be fatal. For this reason, the competitors may be the most important group of all.

The comparisons can be rotated so that each group (best practice organizations, similar organizations, and competitor organizations) is used each quarter. Best practices would be used in January, April, July, and October. Similar organizations would be used in February, May, August, and November. Finally, the competition would be used in March, June, September, and December. In this way, a fresh look is taken every quarter.

PROCESS FLOW ANALYSIS

Almost everything that happens in health care involves a process of some sort. A "simple" encounter with a physician can involve registration, records, a nurse pre-visit, physician exam, simple lab testing, imaging, billing, and appointment scheduling. All of these individual pieces of the process must be orchestrated to work properly. If not, patient satisfaction, clinical flow, provider productivity, volume, revenue, and profitability can all be adversely effected.

Process flow analysis in its many variations is an important tool in improving productivity by improving throughput. It is a workflow charting technique that can be used to examine clinical, operational, and administrative processes, by looking at the who, what, when, where, why, and how of the work. The two most important questions are why (why is the work being done) and how, the question that gets at precisely how the work is done. Do not rely on the written policies and procedures as these will have been modified "in the field" by workers looking to make things work more reliably, quickly, and easily. Instead, walk through the process, perhaps with a worker or two to help explain things, and examine all steps with a careful eye on how things could be improved.

The analysis provides a visual depiction of the work and can be set up to indicate location and sequence of the work, and value added by each element of the process. This can include resource consumption and task time. The top of the analysis indicates the location of the work, the large middle section contains a pictogram of the work and flow, and the bottom section provides space for accumulating the value-added information. A visual depiction will always be more helpful than a verbal description.

Consider, for example, the admitting function. It is spoken about by the admitting director as if it was a single event, a "simple" encounter: "The patient arrives, we get some basic information, do a financial and insurance screening, get some x-rays and lab work and off to the bed he goes. It's a pretty simple process." The reality is quite different and demonstrates the need for better process orchestration. As Figure 12.7 displays, the encounter begins with some preliminary paperwork in the admitting office. Then the patient is sent to have a couple of chest films done in imaging, followed by a return to the admitting office. Next comes a trip to the insurance office for a financial screening and more paperwork, then back to the admitting office, and then off to the lab for blood to be drawn. The final trip back to the admitting office results in a green light for admission, and the patient, by this time upset and exhausted, is finally taken to a room, perhaps to wait again for clinical care to begin. Total elapsed time: 2-1/2 hours. But does it have to take this long?

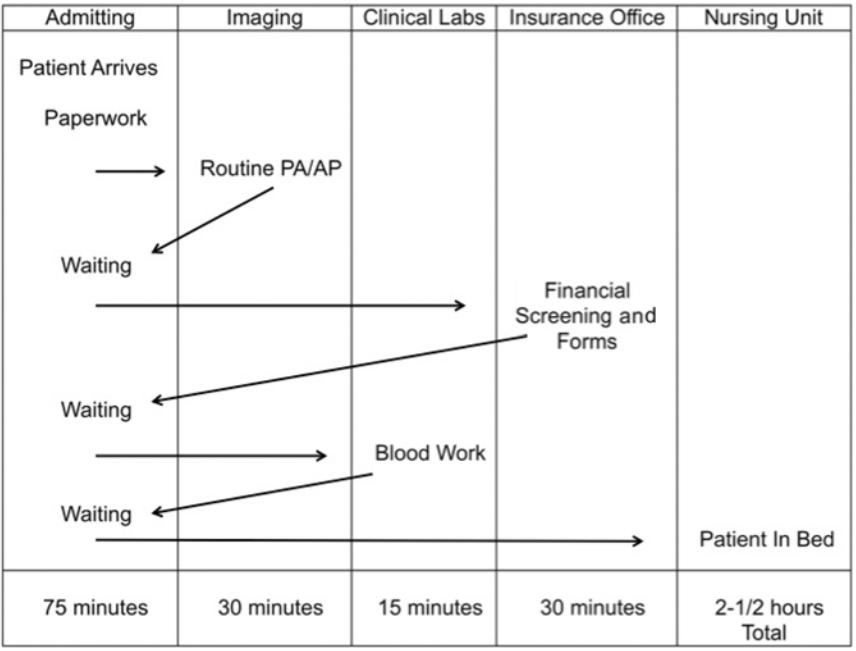

Figure 12.7
A process flow diagram displays the path taken in the admitting process. A total of 2-1/2 hours of elapsed time is needed, nearly 75 minutes of which is spent waiting in admitting.

A properly orchestrated process will always move from upper left to lower right. The arrows indicate patient movement. Any time the arrow moves to the left, the indication is that the process is not moving forward as it should. This is certainly more easily seen and comprehended when visually presented. Any movement to the left indicates an opportunity to fix the process.

Could the process be streamlined by altering the sequence? It would appear so. Figure 12.8 displays one potential remedy. The new process changes the sequence of the work. Once the patient leaves the admitting office, he does not return, finishing at the nursing unit in 45 minutes less time than previously. As displayed in Figure 12.9, the process is restructured more radically, and all work is done in the admitting office where finance and admitting clerks work side by side, a small blood-drawing station is connected to the main laboratory via a pneumatic tube, and a simple

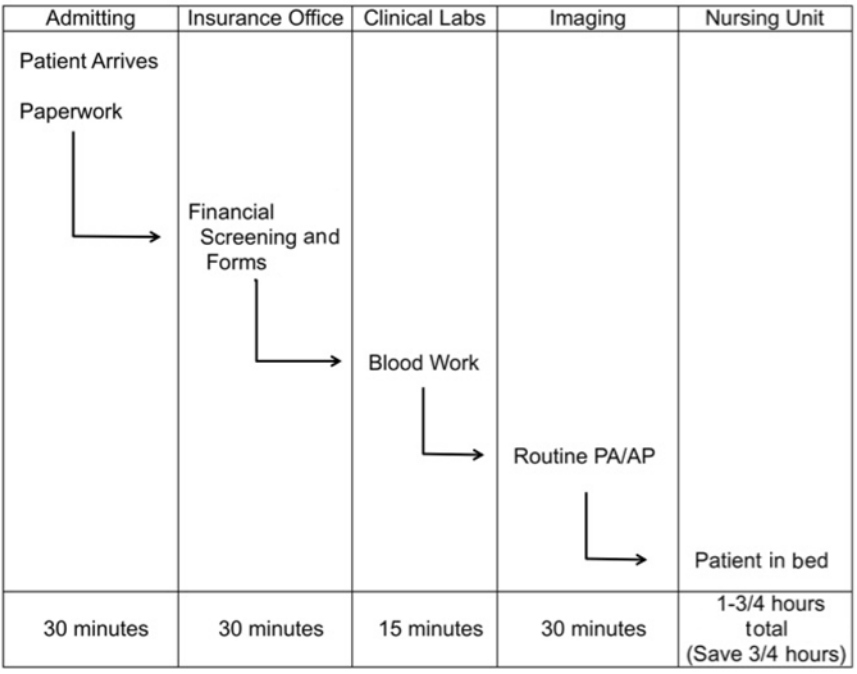

Figure 12.8
This approach reorders the sequence of work and keeps the patient moving without the need to continually return to the admitting office. This process shaves 45 minutes off the total process time.

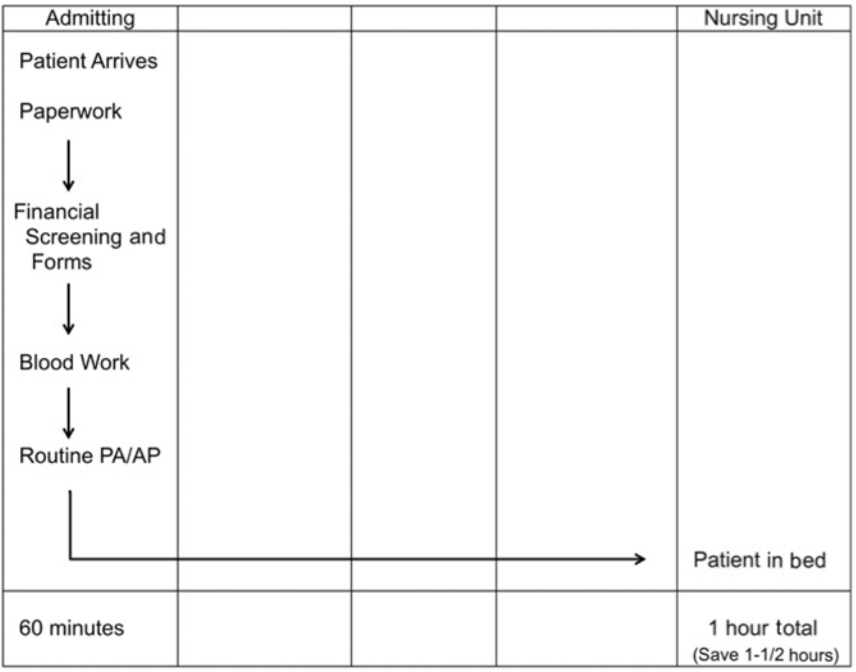

Figure 12.9
In this process redesign, the work is all performed in the admitting office, and, once it is completed, the patient is taken to the inpatient unit. With this process, the patient is in the bed in an hour.

RF unit for taking plain films prior to admitting. This approach reduces the time to just one hour.

Other modifications are certainly possible. A hospital in Maryland eliminated its admitting office entirely, choosing instead to send patients directly to the nursing units where the admitting work is now done. The only limit on process redesign is the culture of the organization (how open is it to creativity and change?) and the imagination of those involved.

One variation of process flow analysis is Value Stream Mapping. Two students at the University of Buffalo used a variation of process flow analysis—Value Stream Mapping—to study the patient discharge process at Mercy Hospital, Buffalo, New York. Using this technique, current performance of the discharge process was assessed and the causes for delays were analyzed. A redesigned process was also created to eliminate the non-value-added activities. In addition, several recommendations were proposed to improve the efficiency of the process. The results showed that

the discharge lead time could be reduced by 81%. The students, Darshan Nagaraju and Pengfei Yi, won the Best Graduate Student Paper award for 2005 from the Society for Health Systems (SHS). Their paper, titled "Improvement of Hospital Discharge Process by Value Stream Mapping," was presented at the 17th Annual SHS conference held in Dallas.

Nagaraju and Pengfei found that it took, on average, over 6-1/2 hours to make a room available for the next patient following completion of a discharge order by a physician. That represents over 25% of the bed's capacity for a day. For a hospital averaging four discharges a day, that equates to a full extra bed of capacity. What is the significance for a hospital with 100 beds? Or 200 beds?

In a similar vein, Care Logistics, LLC, published a monograph entitled "Unleashing Throughput Potential" in 2009[2] that pointed to the benefits of eliminating "white space" in patient care. White space was defined as the amount of time devoted to non-value-added activities (waiting, rework, etc.). It suggested that health care organizations do not measure and report white space and thus there is no improvement in this area. But what if health care organizations did measure white space and achieve the reduction in length of stay that Care Logistics suggests? The impact would be a potential increase in hospital capacity of approximately 30% (3.5 vs. 5.1 days of stay). For some organizations, this added capacity could be converted to additional admissions. For others, it could mean taking care of the same patient load with fewer beds and the associated operating cost. Eliminating white space could have a significant impact on average length of stay, cost, clinical quality, and patient safety as well as throughout, productivity, volume, and revenue.

Caution should be taken not to eliminate all white space. Compressing the value-added elements leaves little room for issues that routinely arise. If all white space is eliminated, no space is available for walk-in patients or the occasional urgent case. Physician practices adopted this practice long ago so they can "fit in" a patient who has no appointment but who nonetheless needs to see the doctor. Patients whose care takes longer than planned can still be accommodated without completely disrupting the schedule. A reasonable amount of white space, determined after careful review of data, is wise to include. As the old adage advises, "everything in moderation."

Another approach is brown paper analysis, a very dramatic and highly visible form of process analysis. Because it is so dramatic and visible, it places added pressure to succeed on those involved. Brown craft paper is used to cover a large space—typically a large wall—and a three-dimensional

representation of a process is constructed on the craft paper. It is a very participative and highly visible method, soliciting comments and suggestions from all who pass by the display. Miniature representations of documents can be displayed. Patients and staff can be represented by miniature stick figures crafted from pipe cleaners (white for nursing staff, blue for patients, red for phlebotomy staff, etc.), and the flow of people, forms, and materials can be displayed using colored string, ribbon, or yarn.

Small boxes of sticky notes and markers can be strategically placed to allow passersby to offer comments or suggestions. This idea-harvesting approach is one of the finest aspects of the brown paper analysis. Anyone who passes by, whether he or she is involved in the process on a day-to-day basis or not, is free to offer suggestions. Staff, who may often feel excluded from process reengineering efforts, are able to make their thoughts known easily and anonymously. This involvement of staff can serve as a morale booster and help create a sense of ownership. Staff who "own" a process and the changes to that process are far more likely to be successful when implementing the changes.

PRODUCTIVITY AND EFFICIENCY

While the emphasis in this chapter is on productivity, do not lose sight of efficiency, which introduces the notion of quality. In the pharmacy, for example, the number of mistakes must be taken into account when measuring productivity. A pharmacy can be highly productive but not very efficient if it experiences a high medication error rate. Consider the example shown in Table 12.5, which demonstrates how high productivity rates may not, in fact, equate with high efficiency.

In this instance, four different pharmacies are compared to see which is the most productive (top of the table). Pharmacy 2, at 13,333 prescriptions per FTE, has productivity rates that are about 30% greater than the others. But Pharmacy 2 also has a very high error rate. Taking quality into account (bottom of the table) using error rates, overall efficiency of the pharmacies can be measured and compared. In this example, the raw productivity rate is reduced by the error rate. Now, Pharmacy 2's efficiency rate is actually the worst of the comparison group. This sort of comparison is valuable in patient care settings like hospitals, physician offices, and reference labs because the output cannot be considered without giving proper weight to its quality.

Measuring productivity at the organizational level can be done by dividing the amount of output derived by a unit or quantity of resources. In

Table 12.5
Comparative Pharmacy Productivity and Efficiency

	Prescriptions Filled	FTE Count	Raw Productivity Rate
Pharmacy 1	150,000	15	10,000
Pharmacy 2	200,000	15	13,333
Pharmacy 3	250,000	24	10,417
Pharmacy 4	150,000	15	10,000

	Prescriptions Filled	FTE Count	Raw Productivity Rate	Medication Error Rate	Efficiency Rate
Pharmacy 1	150,000	15	10,000	1.0%	9,900
Pharmacy 2	200,000	15	13,333	30.0%	9,333
Pharmacy 3	250,000	24	10,417	1.0%	10,313
Pharmacy 4	150,000	15	10,000	5.0%	9,500

Amounts are hypothetical for demonstration purposes only.

this case, the output is expressed in EIPAs. This is an aggregate measure of workload reflecting the sum of admissions and an equivalent amount of admissions that is attributed to outpatient services. For example, 1,000 outpatient visits might equate to one admission. To calculate the number of EIPAs, the total number of admissions is multiplied by (total revenue ÷ inpatient revenue). This increases the number of admissions. The logic is that revenue can be used to equate non-inpatient volume with admissions. The result, EIPAs, is a way of describing this total merged volume.

The following data for Memorial Community Hospital Center will be used for the next series of calculations. Admissions were 20,023 for the latest fiscal year. During that same period of time, total revenue was $402,922,000 and inpatient revenue was $377,584,507. Total operating expense was $154,989,498. The calculations of EIPAs and hospital efficiency are as follows:

EIPAs = Admissions × (Total Revenue ÷ Inpatient Revenue)

EIPAs = 20,023 × ($402,922,000 ÷ $377,584,507)

EIPAS = 20,023 × 1.0671

EIPAs = 21,366

Hospital Productivity = (EIPAs ÷ Total Resources) × 10,000

Hospital Productivity = (21,366 ÷ $154,989,498) × 10,000

Hospital Productivity = (0.00013786) × 10,000

Hospital Productivity = 1.3786

The equation uses 10,000 as a multiplier in order to provide a reasonable output value. Without doing this, the productivity rate would be microscopic (0.00013786).

Because the calculation of the hospital productivity rate uses a monetary value, total resources, a valid comparison over time requires a price leveling to adjust for inflation. For an inflation rate of 3%, the hospital's productivity value would be multiplied by 1 + the inflation rate, in this case 1.03. This inflation-adjusted value is 1.42. In other words, the hospital produced, on an inflation-adjusted basis, 1.42 EIPAs per 10,000 units of resource.

At the department level, productivity can be converted to efficiency fairly easily by factoring in quality. The pharmacy example cited previously uses the medication error rate as a factor to reduce the raw productivity rate to an efficiency rate. Similarly, postponed cases or the rate of surgical site infections could be used in the operating rooms.

For the organization as a whole, something more comprehensive is needed. A total patient harm rate, a composite rate made up of all individual harm measures, can be used to convert productivity to efficiency. The patient harms include, but are not limited to, such things as adverse drug events, hospital acquired infections, falls resulting in injuries, pressure ulcers, venous thromboembolisms, and ventilator-associated pneumonias. The number of harms per 1,000 EIPAs admissions can be converted to a coefficient of harm and used as the conversion factor. The calculation is fairly simple and straightforward.

If an organization experienced 1.13 harms per 1,000 EIPAs, the harm rate would be 1.13. The coefficient of harm is calculated by dividing 1.0 by that harm rate (1.0 ÷ 1.13 = 0.885). Multiplying the raw productivity rate by 0.885 yields an efficiency rate of 1.26 (1.42 × 0.885). The higher the rate is the better as it indicates an organization that is achieving greater levels of efficiency in the use of its resources. Figure 12.10 illustrates the plot of an organization's efficiency over time.

Not every organization measures the same quality indicators, and even fewer use them to convert a raw productivity rate into an efficiency rate, so it may not be easy to compare with other organizations as was the case

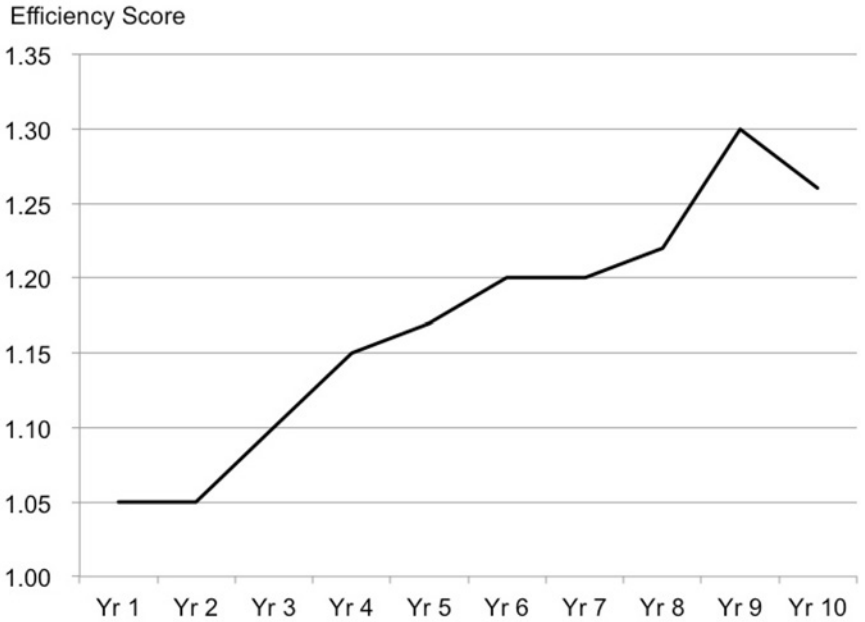

Figure 12.10
This graph displays a hospital's efficiency based on output measured in Equivalent Inpatient Admissions (EIPAs) and adjusted for quality and inflation over time. Because quality is included in this metric, a rising trend is always positive.

with bilateral performance mapping and benchmarking. Still, looking at one's own record over time will give a useful indication of performance. A rising trend is a positive indication of improvement, while a downward trend is a call to action for organizational leadership.

IMPROVING EFFICIENCY

Improving operating efficiency requires an emphasis on clinical quality and patient safety. These improvements lead to better throughput and an improved efficiency rate. Staffing associated with clinical and service quality represents the front line in this effort. Infection control staff who are able to eliminate patient-to-patient or room-to-patient transmission of infections and who can help enforce proper sterile technique can reduce the health care–associated infection rate. This reduces length of stay and clears space for added patient volume. Case managers who follow

inpatient progress can expedite care and reduce length of stay and unnecessary work. In addition, case managers play a vital role in population health by guiding selected patients to choose healthy lifestyles and avoid costly hospitalizations. Intensivists and hospitalists possess the specific skills to move patients through the hospital expeditiously with fewer complications and with better use of scarce and expensive resources. Hospitalists, working with other members of the care team, the patient and family members, can lead group rounds that have been demonstrated to reduce length of stay, improve patient and family satisfaction, and improve clinical outcomes. The governing board, too, plays a role in achieving efficiency via its oversight of quality and patient safety.

Using best practices and evidence-based approaches to care can improve quality. Clinical pathways, treatment protocols, care maps, and treatment bundles have all been shown to improve outcomes and, in so doing, improve efficiency, reduce length of stay, increase capacity, and boost financial performance. Formalized rapid response teams, sometimes called medical emergency teams, while not costing very much to implement have had significant impact, as has the early recognition and response to patients presenting with infections.

Programs, slogans, and campaigns to improve quality are nice, but a culture that places a premium on quality throughout the organization and at every level from clerks to executives works far better and has a more lasting impact on quality. For this reason, approaches such as comprehensive unit-based safety programs can transform an organization's culture to a strong and constant focus on quality.

MANAGING THROUGHPUT

The secret of success in high-fixed-cost industries is volume. The most effective way to increase volume is to streamline throughput so the business can care for more customers. This is true in health care as well. Throughput allows more volume to be captured. This, in turn, leads to more revenue and profits.

The flow of patients through the hospital is dependent on the orchestration of nursing care, ancillary and support services, and other factors like scheduling and patient social issues. This is seen in Figure 12.11. Patients come to the hospital for care, but while many are admitted and discharged, many others are hung up because of clinical (e.g., a medication error) and operational (e.g., insufficient transporters to move patients from the floors to the operating rooms in time) issues that disrupt the process of care and

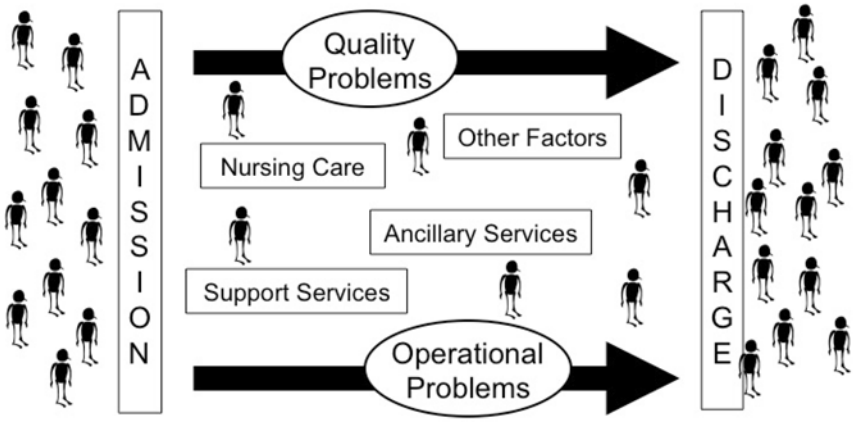

Figure 12.11
The flow of patients through a hospital requires the careful orchestration of nursing care, ancillary and support services, and numerous other factors. Mistakes and delays can prevent patients from moving efficiently through the care process from admission to discharge.

the flow of patients. Worse still, some patients in need of care are unable to get it because beds are blocked as a result of the clinical and operational problems.

Removing these critical delays results in better patient flow. All patients needing care are able to receive it. Resources are better used; better outcomes are achieved; and patients, families, staff, and other stakeholders are happier.

Financially, the impact can be significant. Operating capacity increases because of improved throughput, added volume can be captured, and revenue and profits can increase. Table 12.6 shows the magnitude of this financial potential based on a single bed. Assuming, for illustration purposes, an institution with a five-day length of stay eliminated clinical and operational barriers to throughput and was able to reduce length of stay to four days (improvement scenario 1) and then to three days (improvement scenario 2), the impact on the bottom line would be significant. The first effect of such improvements is that more cases can be admitted. Assuming a net reimbursement payment of $22,500 for each case, the total revenue jumps from $1.6 million to just over $2 million, an improvement of $410,625—for just one bed. At the bottom of the table are the revenue increments based on bed size, ranging from 100 beds (an increase

Table 12.6
Revenue Increments Associated with Improved Throughput and Reduced Length of Stay

	Base	Improvement Scenario 1	Improvement Scenario 2
Calendar days	365	365	365
Average length of stay (days)	5	4	3
Case capacity	73	91	122
Average DRG payment	$22,500	$22,500	$22,500
Total revenue	$1,642,500	$2,047,500	$2,745,000
Revenue enhancement—1 bed		$405,000	$1,102,500
Revenue enhancement—100 beds		$40,500,000	$110,250,000
Revenue enhancement—200 beds		$81,000,000	$220,500,000
Revenue enhancement—300 beds		$121,500,000	$330,750,000

of $40 million) to 300 beds (an increase of $121 million). If the length of stay can be reduced to just three days, the revenue increments range from $110 million (100 beds) to $330 million (300 beds). Since costs are largely fixed, most of this revenue increase falls to the bottom line.

Operational issues, too, can disrupt patient throughput. Awkward registration systems, poorly stocked supply rooms, and work schedules not synchronized with patient arrivals and departures can have a detrimental impact. The biggest challenge some hospitals face each day is getting one patient out of a bed and the next patient into it. Managing this transition along with actively managing the census (whether and when to admit elective cases) can reduce staff stress, avoid waste of costly resources, and provide more effective and efficient care. Figure 12.12 illustrates the common problem of admission/discharge overlap. In this example, approximately 50% of admissions happen before 1:00 p.m., while only 30% of discharges happen by then. Discharges do not catch up until almost 5:00 p.m. A large fraction of the discharges happen at the end of the day shift in the environmental services (EVS) department, leaving the reduced evening shift to clean the bulk of the rooms. Historically, hospitals have had

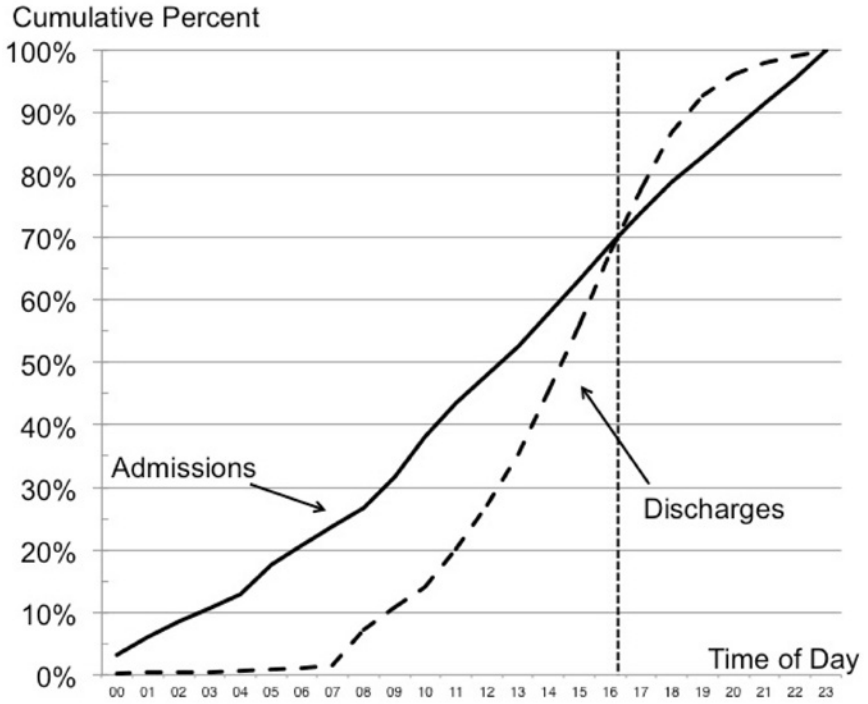

Figure 12.12
Discharges lag behind admissions for much of the typical day, slowing the process of room turnover.

problems with the discharge process. Perhaps, if the discharge time cannot be moved to an earlier time, it is time to rethink the start time for the shifts in EVS. A two-hour later start time would keep the higher-complement day shift available until the bulk of discharges have been cleared and the vacated rooms cleaned. The evening shift could then reasonably be expected to pick up the stragglers.

This lack of orchestration in handling the admission/discharge overlap has a detrimental effect on patient satisfaction (waiting for a room), clinical care (delayed start of treatment), resource use (cleaning some rooms twice in the same day), emergency department flow (blocked beds increase waiting times), and so on.

Remedies, assuming no possible movement of the actual discharge time, can include admissions lounges where IVs can be started and preliminary clinical interventions can be initiated. In this way the patient is making

clinical progress even while waiting for a bed to become available. At the other end of the inpatient process, discharge lounges can help make the process work more smoothly. Rather than occupying a bed on discharge day, patients can be transferred to the lounge with big-screen television, lounge chairs, and other amenities while the discharge process is finalized. The lounge can be minimally staffed to avoid liability problems. But the cost of staffing such a lounge is far outweighed by the revenue opportunity associated with improved patient throughput.

Rather than manage the *average* daily census, focus on and seek ways to reduce the fluctuations around the average. It is easier to manage staffing and control supply costs when census variability is minimized. Figure 12.13 displays a plot of daily census activity. The actual daily census varies significantly around the average of 24 patients. On some days, when the census nears 30, the staff are overwhelmed. Overtime, agency staffing, and other high-cost interventions may be needed to provide an appropriate level of care. At other times, the census is low, and idle time robs the organization of paid-for-but-unused labor.

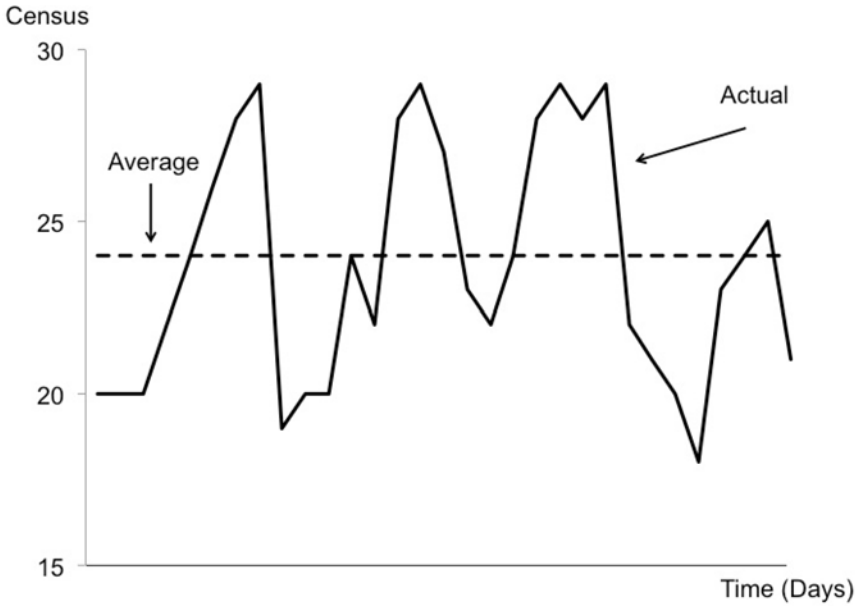

Figure 12.13
Large variations around an average census of 24 patients can be problematic both to patient care and to cost management.

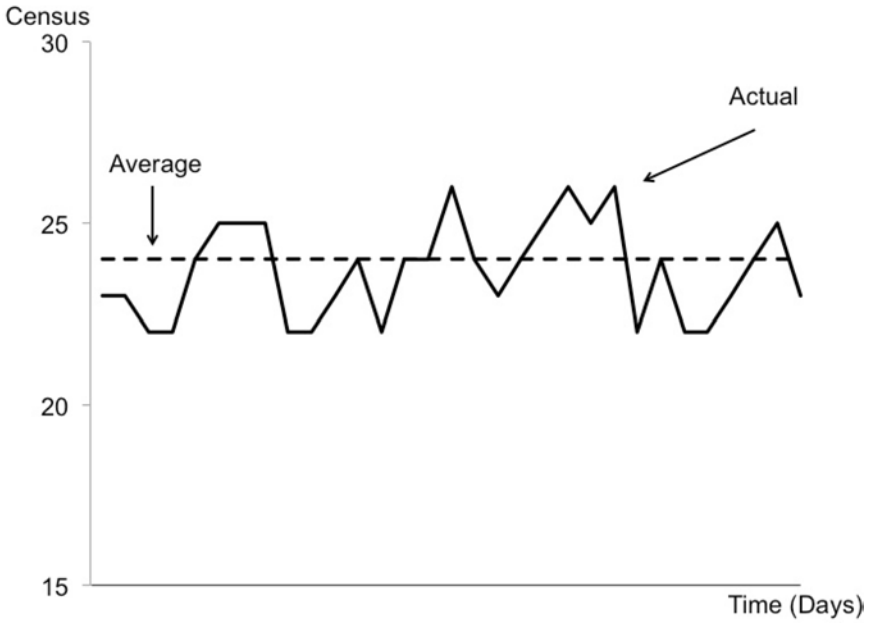

Figure 12.14
Smaller variations around the average census can result in smoother workflow, better staff management, and improved outcomes.

Alternatively, the census can be managed more aggressively and proactively to reduce the amount of variation around the average. Figure 12.14 shows the same average daily census of 24 but with significantly less variability. As a result, the workload for staff is smoother and more easily managed. The peaks and valleys are less dramatic and the matching of staffing (supply) and census (demand) is facilitated. Overtime, agency staffing, and other high-cost actions can be avoided.

The need for better coordination is not limited to the inpatient service. Better coordination of exam room, lab, imaging, and pharmacy schedules can speed patients through. Swipe card technology can be used to alert various department of a patient's arrival for a visit. At the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, for example, when a patient swipes his or her patient ID card, the medical clinic is alerted to the patient's arrival and the pharmacy is notified so it can be ready to administer the medication when the physician confirms the scheduled chemotherapy treatment. Too often, visits that involve exams plus treatments and procedures are totally un-orchestrated and less than satisfying for the patients, providers, and the organization.

Too often, managers in one health care organization look solely to other health care organizations for improvement ideas. The director of admitting at one hospital only makes comparisons to other hospital admitting offices. The practice manager at a physician group just looks at other physician groups. This is not to say such comparisons are not valid. They are. But a better, out-of-the-box, approach is to look to other industries—getting outside the health care box, so to speak—and bring back ideas from successful non-health care organizations. Compare the admitting office to a five-star hotel, which deals with people who are, by and large, ambulatory and who are looking for a comfortable room and good service. Look at how manufacturing plants bring together all the workers, raw materials, and assembly processes to achieve productive and efficient output. In both of these cases, the approaches will need to be tweaked to deal with the differences. Putting lug nuts on Chevys is not the same as caring for a sick newborn in a neonatal intensive care unit. But rather than point to the differences, use the similarities. Getting supplies to the bedside is exactly the same as getting the tires to the car being assembled. Some examples from other industries and their applicability to health care are listed in Table 12.7.

Many other examples (gas stations, hair salons, supermarkets, etc.) exist. All can provide ideas that can be modified for the peculiar aspects of health care and then applied to improve productivity, efficiency, customer service and satisfaction, staffing patterns, and so on. The limit is in the ability of managers and leaders to see the possibilities.

Table 12.7
Borrowing from Other Industries

Industry to Study	What to Borrow	Application
Airlines	Scheduling	OR scheduling
	Flight crew management	Patient safety and quality
Hotels	Guest room turnover	Admission/Discharge
	Housekeeper scheduling	EVS scheduling
Manufacturing	Assembly processes	Resource orchestration
Restaurants	Table turnover	Room turnover
Package express companies	Package tracking	Patient tracking
Amusement parks	Managing long lines	Managing long lines
Online retailers	Inventory management	Inventory management

RESOURCE USE STANDARDS

One of the most significant differences between manufacturing and health care is that manufacturers know precisely what everything costs to produce, while health care providers know very little about the true costs of each unit "produced." Apple knows the cost to manufacture its newest iPhone to the penny. The cost of a cholecystectomy is, at best, an estimate based on the charges for the procedure.

The reason manufacturers know how much things cost is that, by using their robust cost accounting systems, they develop cost standards: amounts of resources that will be consumed in making the product. They know exactly how much labor, wire, glass, plastic, and other components will be used. Manufacturing department managers who are not able to comply with these standard amounts find themselves working elsewhere. While this is not the case in health care, it is possible to develop such cost standards for most, if not all, procedures from chemotherapy to cataract surgery. All that is needed is the will to develop such standards.

Such standards can be used to control cost by allowing managers to "earn" a budget based not on what was thought about resource needs months ago when the budget was prepared but on the actual work they performed. Table 12.8 demonstrates the accumulation of standard cost information for a department that performs four different procedures. The

Table 12.8
Standard Supply Costs per Procedure

	Procedure			
Standard Resources	**A**	**B**	**C**	**D**
Supply item 1	$100	$200	$25	$75
Supply item 2	25	50	25	25
Supply item 3	75	150	50	55
Supply item 4	120	240	20	20
Supply item 5	85	170	5	20
Supply item 6	30	85	30	30
Supply item 7	22	166	10	22
Supply item 8	53	53	12	5
Supply item 9	60	200	20	30
Supply item 10	130	86	3	118
Total	$700	$1,400	$200	$400

amounts of supplies consumed for each of the procedures are listed and totaled.

Then, rather than estimate a budget for the department's supplies, the budget is earned each month by multiplying the number of procedures by the standard cost for each. Assuming the department performed 100 Procedure As, 200 Procedure Bs, 300 Procedure Cs, and 400 Procedure Ds, the amount of budget earned would be $570,000, as shown in Table 12.9.

This use of standard costs for each procedure to "earn" a supply budget represents the strongest way to control supply spending. Any spending in excess of the earned budget would require an explanation. Further, any under-spending would also require some discussion to determine if inappropriate shortcuts had been taken. This approach is used routinely in manufacturing to control cost.

Determining the proper resource assignments requires careful study. The best approach is to observe each procedure several times to gain a thorough understanding of resource consumption. Any deviations observed among the observations should be questioned and resolved. The results can then be tested to make sure nothing has been missed. Once the standards are correct and agreed upon, they can be implemented. This approach can be effectively used not only to control cost but also to reduce and avoid waste.

Resource-use standards form the backbone of relative value unit (RVU) schemes, which are used in health care for such services as imaging, nuclear medicine, physical therapy, and radiation therapy.

The purpose of RVU schemes is to allow a conversation about a variety of disparate things using a common language. Consider a department that

Table 12.9
Earned Departmental Supply Budget

	Procedure			
	A	**B**	**C**	**D**
Supply standard	$700	$1,400	$200	$400
Procedure volume	100	200	300	400
Total earned budget	$70,000	$280,000	$60,000	$160,000
Total earned budget	$570,000			

provides only two services: Procedure A is quite simple and inexpensive, and Procedure B is fairly complex and twice as expensive. In January, the department produces 1,000 of Procedure As and no Procedure Bs. In February, the opposite is true: no Procedure As and 1,000 Procedure Bs. Using procedures as the unit of volume measurement, the indication is that the department's level of volume was the same—1,000 units each month, and resource consumption should be the same each month. But because the procedures are fundamentally different, counting procedures is not going to account for these differences. Some form of relative value scale can avoid this dilemma.

The Medicare system of resource-based relative value system—the RBRVS system—used for reimbursing physicians for services that they perform is an example of an RVU approach. Each physician encounter is different, and the RBRVS approach allows for reimbursement that is tailored to the actual intensity of the encounter.

Any department in any health care organization that offers a multiplicity of products or procedures can benefit from the development of the system of RVUs. The starting point is a detailed resource consumption matrix, such as that seen in Table 12.10. With this level of information available on the labor cost and supply consumption, it is possible to develop relationships among the various procedures.

The values for labor and supplies are assigned after careful study and observation. Again, multiple observations, testing, and agreement are needed before the values can be put into use. Using Procedure A as an example, the total resource value ($1,050) is divided by a common denominator that will be used for all procedures—in this case 100. That division yields an RVU value of 10.5 for Procedure A. Similar math is used for the other three procedures. At this point, RVUs can be used to measure activity in the department. Table 12.11 shows the raw monthly procedure volume.

A simple comparison of the early and late months of the year gives the impression that volume is declining. The monthly average number of procedures in the first three months is 6,139, while in the last three months of the year it has declined by more than 22% to 4,775. Graphically, this trend is displayed and is more apparent in Figure 12.15.

The manager of this department might be challenged by the organization's leadership to reduce staffing and cut supply spending. But is this the case? Is the department less busy? Or is this an artifact of using the raw procedure counts to measure volume? The answer lies in the RVU volume shown in Table 12.12.

Table 12.10
Resource Assignments per Procedure

	Procedures			
Standard Resources	**A**	**B**	**C**	**D**
Labor component				
Supervisory time	$75	$75	$50	$25
Professional staff time	200	100	200	100
Technical staff time	75	50	45	30
Total labor component	$350	$225	$295	$155
Supply component				
Supply item 1	$100	$200	$25	$75
Supply item 2	25	50	25	25
Supply item 3	75	150	50	55
Supply item 4	120	240	20	20
Supply item 5	85	170	5	20
Supply tem 6	30	85	30	30
Supply item 7	22	166	10	22
Supply item 8	53	53	12	5
Supply item 9	60	200	20	30
Supply item 10	130	86	3	118
Total supply component	$700	$1,400	$200	$400
Total resource value	$1,050	$1,625	$495	$555
Denominator	100	100	100	100
Relative value units	10.5000	16.2500	4.9500	5.5500

This data suggests the level of business has remained relatively flat throughout the year. Once again, a graph (Figure 12.16) makes the performance pattern easier to comprehend.

The reason for this discrepancy has to do with the intensity of the procedures. While the raw count does not show this, the RVU count takes it into account. The intensity is growing, stepping up over the course of the year. For this reason, the manager in this department should be using a third statistic to help track and explain departmental performance: RVUs per procedure are shown in Table 12.13.

Table 12.11
Monthly Procedure Volume

	Procedures				
Monthly Volume	**A**	**B**	**C**	**D**	**Total**
January	1,000	500	600	700	2,800
February	1,100	550	880	968	3,498
March	1,050	525	840	924	3,339
April	1,150	575	920	1,012	3,657
May	900	450	720	792	2,862
June	1,100	550	880	968	3,498
July	1,000	500	500	550	2,550
August	1,250	625	625	688	3,188
September	1,100	550	550	605	2,805
October	1,000	500	500	550	2,550
November	1,100	400	550	605	2,655
December	1,575	450	100	100	2,225
Total	13,325	6,175	7,665	8,462	35,627

Table 12.12
Monthly RVU Volume

	Procedures				
Monthly Volume	**A**	**B**	**C**	**D**	**Total**
January	10,500	8,125	2,970	3,885	25,480
February	11,550	8,938	4,356	5,372	30,216
March	11,025	8,531	4,158	5,128	28,842
April	12,075	9,344	4,554	5,617	31,589
May	9,450	7,313	3,564	4,396	24,722
June	11,550	8,938	4,356	5,372	30,216
July	10,500	8,125	2,475	3,053	24,153
August	13,125	10,156	3,094	3,816	30,191
September	11,550	8,938	2,723	3,358	26,568
October	10,500	8,125	2,475	3,053	24,153
November	11,550	6,500	2,723	3,358	24,130
December	16,538	7,313	495	555	24,900

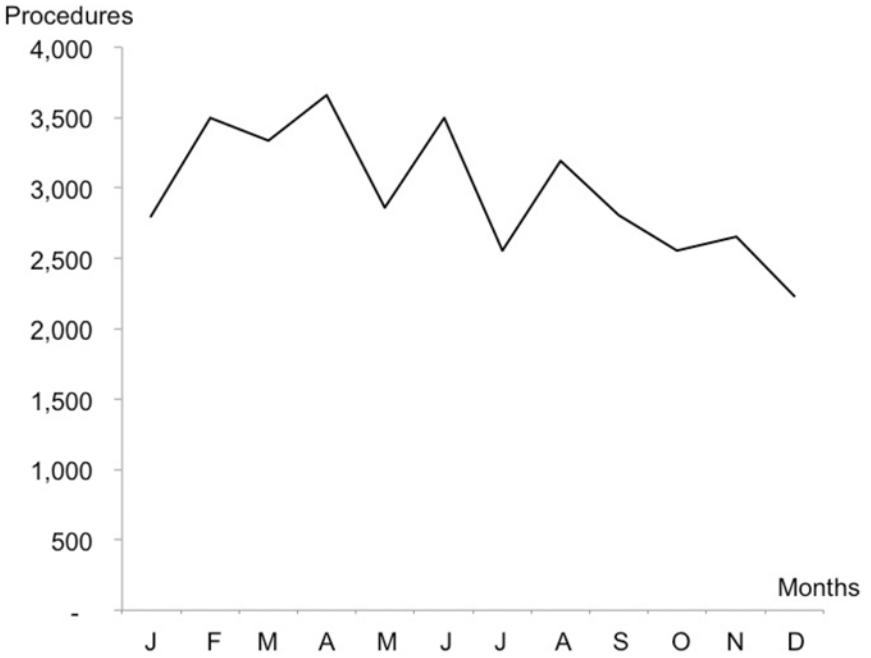

Figure 12.15
Procedure volume has been declining for several months. This decline is more easily seen in the graph than in the table.

Table 12.13
Relative Value Units (RVUs) per Procedure

Monthly Volume	Procedure Counts	RVU Counts	RVUs per Procedure
January	2,800	25,480	9.100
February	3,498	30,216	8.638
March	3,339	28,842	8.638
April	3,657	31,589	8.638
May	2,862	24,722	8.638
June	3,498	30,216	8.638
July	2,550	24,153	9.472
August	3,188	30,191	9.472
September	2,805	26,568	9.472
October	2,550	24,153	9.472
November	2,655	24,130	9.089
December	2,225	24,900	11.191
Totals	35,627	325,159	9.127

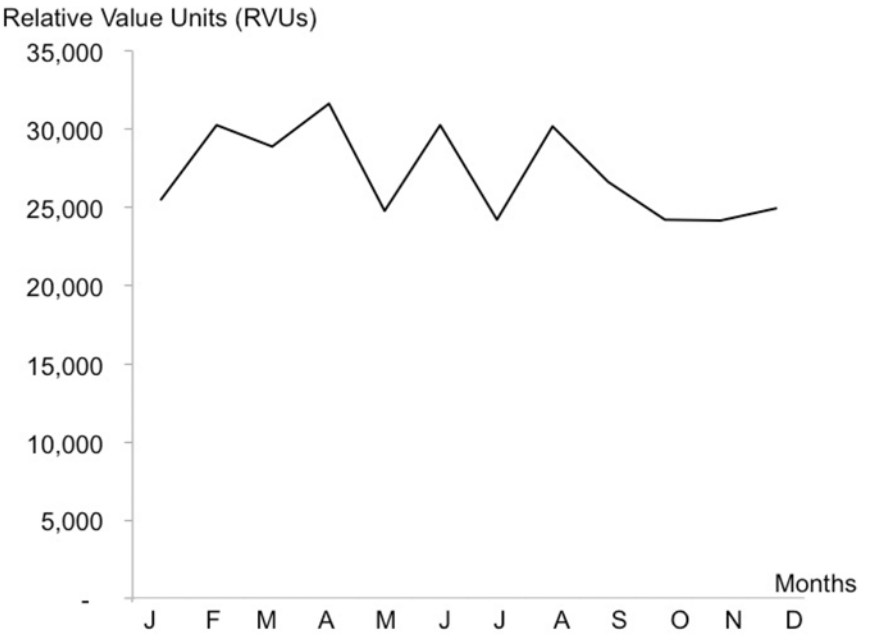

Figure 12.16
While procedure volume has declined, this graph of RVUs shows the department's workload has remained relatively constant.

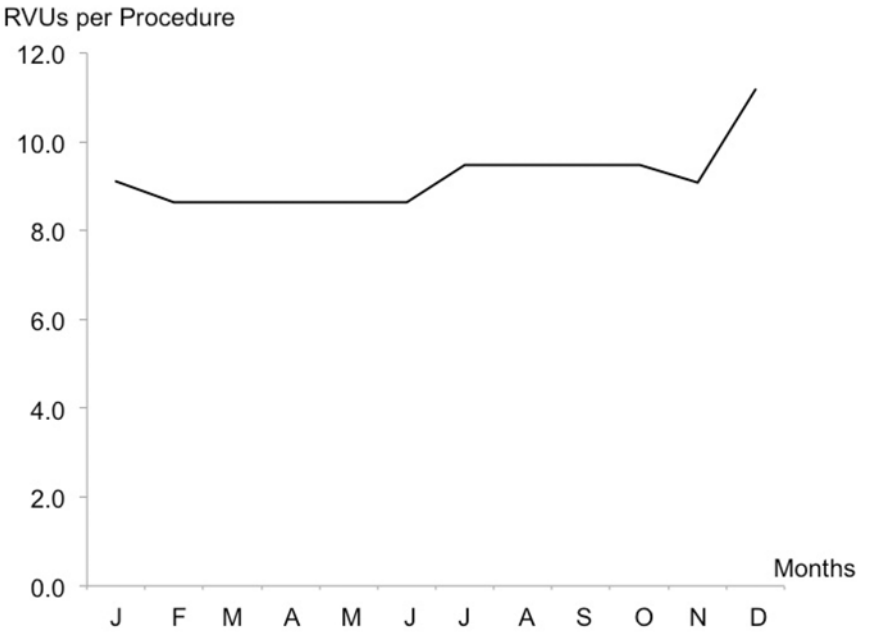

Figure 12.17
The pattern of intensity, expressed as RVUs per procedure, grows each quarter. Procedure volume is, in fact, down, but the intensity associated with each procedure has been growing. This can help the manager explain the operating situation to higher-ups.

This shift in intensity can be more clearly seen in Figure 12.17. Rather than a linear growth trend, the intensity follows a step function, increasing each quarter. This pattern does show up when the data are graphed. As discussed in Chapter 10, visual displays are far better than tables of numbers when it comes to discerning trends and patterns.

With this data in hand, the manager can explain what has been happening, defend against the request to reduce staffing and supply consumption, and more accurately predict future volume and intensity. Further, since the data (raw procedure counts, RVU counts, and RVUs per procedure) are captured by type of procedure, shifts in service can also be understood and more easily predicted.

Care should be used to avoid denominators that result in extremely large or small RVU values for individual procedures. Dividing by 10, for example, would result in far too many total RVUs each month. Also, be careful not to use a denominator that results in repeating decimals (e.g., 3.33333333333 or 5.66666666667). The best denominator will result in reasonable values for each procedure, monthly totals that are neither too small nor too large, and will avoid irrational numbers. (An irrational number is one that cannot be written as an exact number. The value pi is an example. Its decimals never end. While many think of pi as 3.14, it is really 3.14159265359. . .). Table 12.14 shows this point using data on total resource value from Table 12.10. Note that several denominators (200, 300, 400, and 500) can be used to calculate the relative value units. Using 200 yields values of 5.2500, 8.1250, 2.4750, and 2.7750. The values stop

Table 12.14
Potential Denominators and RVU Values

	Procedures			
	A	**B**	**C**	**D**
Total resource value	$1,050	$1,625	$495	$555
Denominator	200	200	200	200
Relative value units	5.2500	8.1250	2.4750	2.7750
Denominator	300	300	300	300
Relative value units	3.5000	5.4167	1.6500	1.8500
Denominator	400	400	400	400
Relative value units	2.6250	4.0625	1.2375	1.3875
Denominator	500	500	500	500
Relative value units	2.1000	3.2500	0.9900	1.1100

after two or four decimal places. But using 300 as a denominator yields a repeating decimal for Procedure B. This value never stops and does not round off crisply. As a result, it should not be used.

Any of the schemes shown in Table 12.14 can be used except the one based on a denominator of 300. Choose the one that best suits the needs of the department. Periodically, perhaps every few years, the values can be updated to reflect agreed-upon changes in practice. Inflationary adjustments need not be made since the values are not monetary in nature.

A FINAL THOUGHT

The ongoing emphasis on improving productivity, efficiency, and resource use begs a question. Would a hospital benefit from a new position? A chief throughput officer (CTO), trained in engineering and nursing, would understand the operation of systems and system thinking, as well as have a solid grasp of the clinical activities that are the heart and soul of the business. Analogous to a manufacturing production manager, this individual would be responsible for day-to-day oversight of all throughput processes. Just as a production manager can orchestrate the various departments in a factory, the CTO would have the authority, for example, to hold imaging techs on duty if the emergency department needed their support. The CTO could cut through the problems of turf, communication, and lack of situational awareness. This individual could look down on the organization from a high altitude and see into each of the individual silos that managers find themselves in on a day-to-day basis. With this more global view, better operational decision making could result in improved performance.

NOTES

1. "Best Practice Benchmarking: The Path to Excellence," *GBN Review 2003/04*, The Global Benchmarking Network, Best Practice Institute, Rochester, NY.
2. "Unleashing Throughput Potential," Care Logistics, LLC, Alpharetta, GA 30009, 2009.

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Chapter 13

REVENUE AND EXPENSE STRATEGIES

Improving an organization's profit and loss position requires a series of strategies that target revenues and expenses. No single strategy is sufficient. Because costs are largely fixed, however, those strategies that improve revenue may prove to be more effective and should be the first to be considered.

REVENUE ENHANCEMENT

The first step in improving revenue is to prepare a comprehensive analysis of the revenue stream. This analysis should identify the payers, the proportion of the business they each cover, and their level of payment (collection rate). Patient demographics should also be examined. This includes both demographic data (age, income levels, locations) and disease prevalence data (cardiovascular disease, cancer, diabetes, etc.). Another important consideration is the profile of services offered. This includes both the location (inpatient vs. outpatient) and the types of services (which diagnostic and therapeutic services). Because a certain level of price sensitivity is a factor in health care, a review of prices should be included. The organization's billing and collection situation (overall and segmented collection rate, lag time between billing and collections, claims rejection rate, billing delays, etc.) rounds out the analysis.

Once the revenue stream has been thoroughly examined, attention can turn to identifying ways to increase revenue. This involves a review of current services (supply) compared to services needed (demand) in the marketplace. This comparison can inform decisions about which services to curtail, which ones to expand, and which ones could benefit from a

revitalization of some sort. A shrinking pediatric population could mean that a multispecialty physician practice no longer needs as many pediatricians. If the population is aging, geriatrics care may need to be introduced or expanded. A variety of services may be bundled together, for example, women's health, and given a fresh face and new appeal to a changing demographic.

Pricing strategies can be effective in increasing revenue. Discounts can attract volume from all or selected payer groups. Laser vision surgery and certain cosmetic procedures that are typically not covered by insurance are good targets for this strategy. Taking advantage of individual patients' price sensitivity, lowering the price can increase demand. If a 10% cut in prices results in a 15% increase in volume, total revenue increases. At the same time, the added volume and revenue works well with a provider's high fixed cost profile. The cost per unit of service falls, thus allowing the lower price to generate more profit. Promotional pricing (discounting, but for a limited amount of time) can help establish demand for a new service.

Finally, bundling and unbundling of services can offer patients increased value. Bundling involves putting together packages of care at a single price. A comprehensive physical exam, a major lab workup, a cardiology screening, and a nutritional consult may be bundled together and offered at a price that is less than the individual prices of the separate services. The value to the patient is partly a one-stop-shopping experience, but beyond that some services that do not normally enjoy significant demand can see added business. This, in turn, can help better cover, even at a reduced price, the fixed costs. In the opposite direction, unbundling allows patients to buy only the services they actually want—cafeteria style.

Marketing strategies can expand an organization's service area, leading to increased volume or to a different, better mix of payers. Specific populations of patients can be targeted. Sports medicine targets younger patients who often have better insurance coverage. A center for women's health or, more broadly, women and children may attract specific volume. An obvious example would be obstetrical services, but there could also be increased volume in other services like orthopedics and cardiology.

Improving collections management can yield a better net revenue position not by increasing volume but rather by collecting the bills better and improving cash flow as well. Prompt billing of services, correct billing information, accurate coding, appropriately aggressive collection efforts, proper coordination of medical records information, and physician documentation are all elements of this effort. In a similar way,

contracting strategies that draw volume and revenue must be appropriate and not disadvantage either the provider or the organization with which it is contracting—making sure both sides can live up to the terms and conditions.

Revenue enhancement strategies must be cognizant of the marketplace reality of demand, regulation, customer service, access, and convenience. Focusing on the services patients need is obvious, but the focus should also be on the services patients want. That, too, represents volume and revenue. Regulatory requirements must also be considered. Federal, state, and local jurisdictions, alphabet agencies (OSHA, CDC, EPA, NTSB, etc.), and nongovernmental agencies like the Joint Commission all have a say in how health care providers operate. In Maryland, a state agency controls hospital prices for all services and total revenue via a cap on total revenue. All of these must be factored in as strategies for revenue growth are considered.

Customer service may be just as important as clinical expertise. Patients view health care differently than those working in the field and make decisions about which providers to use based less on the science and more on the personal touch. Physicians with excellent clinical skill but a poor "bedside manner" may have difficulty retaining patients over time. Registration clerks who begin the patient's experience with "why are you here?" and a challenge in their voice can set a negative tone for the entire encounter. Staff entering a patient room, but not introducing themselves before asking a series of personal questions, can be off-putting. And despite the best efforts of health care marketing experts, word of mouth is still in play. The rule of thumb is that patients will tell four people about a good experience and 20 about a bad one. If organizations expect to attract patients, they must pay attention not only to what they do but how they do it. More and more, organizations are concentrating on the patient experience; some have even obtained the requisite experience by hiring directors from five-star hotels.

Access and convenience also play into the customer experience. Large organizations often confuse access and convenience. They speak of providing "convenient" parking. But how close is the parking to the care? A 50-yard walk for a 25-year-old is not a problem, but what about a 75-year-old? How convenient is it for older patients? Patients make choices based on how convenient things are. That is why McDonalds® has always had a drive through. It makes it easier—more convenient—to buy the food! Access is about eliminating barriers; convenience is about ease of entry. The two are different and should never be confused.

EXPENSE CONTROL AND REDUCTION

Just as with revenue, the first step in controlling or reducing cost involves analysis. Knowing the characteristics of operating costs facilitates their control. Knowledge and data help in the development of appropriate strategies to reduce waste and to take advantage of operating costs that are largely fixed.

Spending analysis begins by determining the amounts being spent on a variety of resources: labor, supplies, purchased services. Questions are at the heart of the analysis. Are the amounts being spent and the items themselves appropriate? Do the right people have spending authority, and are the right people being held accountable? Are supplies being ordered and consumed properly? Why are certain supplies being consumed at the current level? Are the staff and other resources being used appropriately? These questions and others should be asked with an open mind. Preconceived notions have no place in the analysis. Asking a colleague from a different discipline or department to offer his or her ideas and observations can be quite helpful—a different perspective often provides a better view of things.

Challenging consumption and pointedly examining what could be reduced or eliminated is important. Often, spending "just happens" because nobody has paid proper attention. Managers should look periodically to see what supplies, by type and quantities, are truly needed. Consolidation of resources can reduce overall cost. If each of 10 nursing units has its own patient transport moving patients from the floor to imaging, the ORs, and so on, an organization might be able to reduce cost by consolidating the transportation function and eliminating a few full time equivalents (FTEs). Eight highly efficient transporters whose activities are centrally orchestrated may be capable of doing the work of 10 decentralized transporters, none of whom is used efficiently. The challenge with this and countless other consolidations is turf. Getting managers to "give up" dedicated staff and rely on a centralized service can be difficult. Reward systems and organizational culture must be supportive of this sort of activity. Accountability for a proper level of service must never be lost.

Managers trying their best to control spending often run afoul of the "pipeline effect." Spending that has been committed to but that has not yet appeared in a departmental performance report is the villain. Managers must keep track of these future spending amounts. The lead time between ordering and receipt of goods and services (and recognition by the accounting department for inclusion in the reports) can cause a manager to

overspend. This is essentially a tracking issue. Managers can sometimes forget what has been ordered. Avoid the unpleasant surprise of telling the boss that spending will stop at a certain level only to get the subsequent report that shows more spending. This can cause problems at performance review time. It is better to keep track of what is in the "pipeline," commit to a higher spending amount, and hit it than to commit to a low amount and spend high.

At the organizational level, certain spending is not just fixed but embedded. Even fixed costs can be eliminated. A manager salary is typically thought of as a fixed expense, but the position can be eliminated and the fixed cost can go away. A lease, for example, may not go away for some time after a no-longer-needed space is vacated.

All of this information about spending needs to be gathered and considered in order to effectively control and reduce expenses. Failure to do so can cause the department and the organization to become dysfunctional. Not understanding the importance of environmental service technicians in controlling the spread of infections from one patient to the next or from a vacated patient room to the next patient using the room can result in a decision to reduce environmental services (EVS) staffing. This can result in a spike in infections because there is insufficient EVS staff to properly clean rooms. Reducing the nurse-to-patient ratio, even by a small amount, has been documented to result in increased mortality and morbidity. A lack of proper understanding about how nurses provide care might lead some to think such a reduction is a reasonable way to reduce cost. Only later does the folly of this decision become apparent. By that time, the damage is done.

Keep in mind the profile of fixed and variable costs in trying to attack spending levels. Most cost is fixed, as discussed in Chapter 3, and some (depreciation and interest expense) cannot be managed at the department level. As a result, management must think operationally and strategically. It is easier to avoid spending than it is to curtail it once it has started. The old adage that "you can't un-ring a bell" applies. If volume is rising or believed to be about to rise, attempts should be made to shift as much cost as possible from the variable to the fixed category so cost does not rise at the same rate that volume does. The opposite is also true. Transferring as much cost as possible to the variable category should be done in anticipation of declining volume so that as volume drops, costs will also drop. They will not drop as rapidly, but they will go down. Consider a department with 90% fixed costs. If volume rises by 10%, costs will rise by only 1%. That is the kind of leverage that managers can take advantage

of to lower their cost per unit of service. But those managers will need to anticipate this. Conversely, if volume falls by 10%, costs will drop only by 1%. As a result, the cost per unit of service will rise.

The fact that most operating cost is labor cost complicates matters. These do not lend themselves to short-term fixes. Can staff be sent home without pay? Some organizations have found this to be nearly impossible without disruption or risking the possibility that these staff will leave for "greener pastures" in the long run. Some have tried half-shift furloughs that send staff home without pay for four- or six-hour blocks in response to census fluctuations. But even this approach has risks. Others do send staff home and allow them to use accrued paid time off so they are still paid. This strategy can help avoid vacation coverage costs like overtime or agency use in the high vacation months of June through August and can have some value to an organization. Some organizations have adopted a professional practice model that pays annual salaries as opposed to hourly rates of pay. This provides more flexibility in staffing. If staff are not needed, they can be released without a pay penalty. When volume is high, they may work longer than a regular shift to provide the necessary coverage. From an overall perspective, proactive volume management is a better strategy than trying to react to volume fluctuations.

Consideration must also be given to the strategic implications of operational decisions. If an organization suffering from reduced volume resorts to a layoff, it may have difficulty hiring in the future when volume recovers. Since most layoffs follow a "last hired, first fired" policy, prospective employees may be reluctant to sign on and risk being caught up in another layoff and be the first to be shown the door. Surgeons, who generally have more than one place to do their surgeries, may be reluctant to operate in a hospital that has trimmed the OR staff. Every action that management takes has consequences. Some of them are unintended, but they still impact the organization.

The Pareto Principal, the 80/20 rule, is applicable for controlling and reducing costs. Pareto, an Italian economist, held that 80% of the outcome was determined by just 20% of the inputs. In other words, a few items of spending can have major impact on the total. In many departments, a small portion of the resources is responsible for the bulk of spending. In the pharmacy, for instance, just 20 or 30 medications may account for most of the spending. Carefully managing the few can reduce the amount of management intervention time and result in an improved spending rate. Trying to keep an eye on everything in the formulary makes it difficult to focus effectively on anything.

Two fundamental approaches can be employed to deal with spending. The participative approach involves the staff in helping formulate strategies and develop ideas. It is a bottom-up approach. The approach works well at both the department and organization levels. The centralized approach is a top-down approach that works best at the organizational level.

THE PARTICIPATIVE APPROACH

The participative approach takes longer to achieve results and is better suited to long-term change. It takes longer because those involved must spend some time learning about the current spending level, the way work is performed, the "rules of engagement," and the drivers for improvement. The "rules of engagement" will identify the latitude the participative group has in examining operations and challenging how things are done. They may be told that staffing reductions are not to be considered, for example, or that certain functions or services are to be carefully scrutinized. Understanding the drivers, the reasons behind the need to improve, will allow the participants to make better choices from among all the ideas they are considering. "Because" may work with a three-year-old, but adults need more than that. And if leadership explains carefully and fully why improvement must happen, those participating will more willingly enter into the work. Further, if they understand the "why" of their work, they may find even better things to do. Is it really cost reduction needs that are driving the initiative or is it a need to improve the bottom line? Should they limit their search to expenses, or could they make better suggestions by looking at revenue as well as cost and perhaps putting forth a series of improvement ideas that involve both cost and revenue? Knowing the "why" will allow them to do a better job.

The participative approach must be carefully managed. Each of the members must feel included in the discussions. No one should feel excluded from the conversation. Avoid situations in which rank dictates who does and does not participate.

In meetings that cross professional lines and involve various ranks from EVS techs to physicians, the use of rank can sometimes stifle participation. What EVS tech in his or her right mind would tell the doctor he is wrong? One of the best ways to avoid this is to operate on a first-name basis only with no titles and no ranks.

Regardless of who is managing the group, if someone is not participating, he or she should be encouraged to do so. If it is a case of being shy or put off by "more intelligent" or higher-ranked people, gather the person's

information separately from a group session. Then present that person's ideas to the group, but make sure that proper credit is given. In this way, the worker's ideas get into the mix. Because the participative approach takes time to be successful, an appropriate amount of time should be allocated to gathering information, examining processes, visiting locations, and so on. In addition, some amount of resources should be provided to support the group. If an idea requires the building of the model, money should be available to do that.

When the group visits a worksite to understand process, they should pay attention to the workers. They are the people who do the work and very likely know how best to improve things. Realistic expectations should be set for the participative group. It is unfair to expect them to solve years-long problems in only a week or so. They should be pushed, certainly, but not asked to do the impossible. Stretch goals are important and workers like to be challenged to achieve more and to excel. Keep them challenged but not overwhelmed.

Incentives go a long way to fostering ideas. Allowing the group to benefit financially or in some other way from the fruits of their labor is reasonable. It may be impossible, from an organization cultural standpoint, to pay them a financial reward for good idea, but something as simple as a handwritten note thanking them for their hard work will certainly be appreciated.

An environment that tolerates mistakes is healthy. Imagine how reluctant people would be to put forth their ideas if there is no tolerance for a mistake. Suppose the group proposes a new approach to registration, but the idea does not work. If the culture is intolerant of such failures, the group may not propose another idea ever again.

THE CENTRALIZED APPROACH

The participative approach is likely to deliver significant results that can be more easily implemented because of its point of origin. However, in some circumstances, the centralized approach is more appropriate. This top-down approach generally involves more organization-wide initiatives. Efforts to keep staff working productively such as child day care, sick baby day care, and employee assistance programs are generally implemented at the organizational level, not at the department level. Changes in job descriptions to move from highly specialized, single-task workers to job diversification and job enrichment in which workers are assigned a variety of tasks may have their genesis in a department; but because of the

organization-wide human resources consequences, they must be managed centrally. Labor contracts, labor laws and regulations, and other considerations may not be well understood at the department level. Improvements in supply contracting, better inventory management, improved collections, and better care contracting generally do not happen at the department level.

Sometimes, however, a centralized approach to controlling or reducing cost may actually be counterproductive. The imposition of hiring freezes and additional layers of spending authorizations do not generally yield the hoped-for results. A hiring freeze is a strategy to reduce the workforce via attrition. The hiring process is halted, and as positions open they go unfilled. Left unfilled, the work of these vacant positions is spread among the remaining workers, which increases their workload and stress levels. The better workers in a group are incentivized to move on to a different organization. This can rob the organization of its best workers—the ones who are able to find better jobs. When the best employees leave, those who remain may not be able to perform as well.

When an ongoing reduction in business volume requires a freeze or reduction in the workforce, the best approach may be a combination of the centralized approach, which determines the size of the needed reduction, and a more participative approach that manages the freeze. An employment committee made up of department managers can make decisions about which frozen positions should be thawed. A department that has two registration clerks and loses one of them, for instance, may be allowed to fill the vacancy. Another 10-clerk department that loses one may not be allowed to hire a replacement. In the best of all worlds, the employment committee would function less as a red light/green light committee on hiring, but as a resource reallocation committee that could transfer a clerk from one department with few or no vacancies to one with several vacancies. In this way it functions as a human resource reallocation committee and helps balance the workforce.

Requiring additional layers of authorization to purchase supplies can actually have the opposite effect. Department managers, needing to get the job done, may be incentivized to order more supplies and more frequently knowing that there will be delays in the approval process because the "front office" is involved in the approval process. The result can actually increase spending—the exact opposite of its intended result. Every good idea has unintended consequences. The additional layer of authorization is reminiscent of the "prevent defense" in football. The home team is leading by three points with five minutes to go. Rather than stick with

the defense that has served them well for the first 55 minutes, the team switches to the prevent defense which is supposed to prevent the opposing quarterback from completing a long touchdown pass. Instead, that smart opposing quarterback marches his team down the field 10 and 12 yards at a time. The result is the same—a winning touchdown. The now losing team would have been better off sticking with the defense that had worked most of the day. Similarly, changing the authorization requirements may be counterproductive. A better approach is to inform the organization's managers of the need to reduce spending on an urgent basis, give them new, reduced budget targets, and then hold them accountable for doing so.

Sometimes, the centralized approach is the only option available to an organization. A reduction in the workforce or the consolidation of departments seldom happens at the department level. It is unlikely that two nursing unit managers will get together over lunch and decide that combining their two units could result in a reduction in one manager position.

The best approach to managing costs may involve both the participative and the centralized approaches. Workers should be inspired to produce their best work and to work smarter, not harder. Inspiration, not perspiration, has a better chance of success. Provide a supportive environment in which mistakes are tolerated as long as they are genuine attempts at improvement. Set expectations that are challenging but realistic. Being farsighted to avoid problems is better than trying to recover from them and is a hallmark of better leaders and managers.

Chapter 14

PRESENTING FINANCIAL AND BUDGET DATA

Perhaps no words strike as much fear in the heart of a manager as the simple notation on his or her calendar: meeting with finance 2:00 p.m.–4:00 p.m. Whether to negotiate a budget for the upcoming year, review year-to-date performance compared to the current budget, or simply discuss a financial situation, anxiety, apprehension, fear, and downright panic are some of the emotions managers experience. But it does not have to be that bad. The meeting can be a very positive experience if approached properly.

PREPARING FOR THE MEETING

The key to any successful meeting is a predetermined agenda. Whether formally prepared and distributed or merely kept in the minds of the person who chairs the meeting and the participants, the agenda acts as a guideline for discussion and as an aid in keeping the meeting on track. Moving off in tangential conversations can waste valuable time. Even a brief agenda of perhaps three or four items contributes to a smoother, more productive meeting.

A meeting called to discuss a single issue, for example, quite often will deal with several topics that are intertwined within the stated issue. A meeting called to discuss the single issue of spending versus budget will likely deal with such topics as patient acuity, volume, staffing, and supply utilization.

If possible, offer to prepare the agenda for the meeting and circulate it to all those attending. Volunteering that "I could prepare a brief agenda if you think it would be helpful" sets a tone of cooperation that can help

smooth away any confrontational feelings that may be present. It tells the reviewer that the manager is interested in a productive meeting. It also allows the manager to prepare the agenda with issues or topics listed in the sequence that best serves his or her purpose.

When formulating the agenda, positive items should be listed first and negative ones should follow. This allows a buildup of favorable momentum before the discussion turns to the negative items. Positive aspects of performance should be accentuated. To use an old American idiom, managers should tactfully blow their own horns. They should demonstrate the kind of return the organization has achieved by investing resources in their departments and entrusting them to manage them. This can be accomplished anecdotally, or more persuasively, by displaying a departmental profit and loss statement (P&L).

The transition from positive to negative items on the agenda should be accomplished with a transitional summary of the positive accomplishments. Negative items should not be discussed as problems but rather as "challenges" or "opportunities for improvement." This removes, to a degree, the negativism and frames the issues with the positive action orientation. The manager with more staffing than budgeted should deal with "the challenge of reducing full time equivalents" or "the opportunity to realign staffing" rather than the problem of overstaffing.

This is not to say the negative aspects of performance can be glossed over by the use of semantics. Problems must be dealt with honestly and openly, and managers must be prepared to discuss the genesis of the problem and the steps to resolution that they are taking or plan to take. The manager who talks of the challenge of reducing FTEs rather than the problem of overstaffing must be prepared to discuss how the extra employees came to be hired in the first place and what steps are being taken to reduce the FTE count (a hiring freeze, attrition, etc.).

In a budget meeting, understanding the constraints that the organization must live within is important. If the coming year is to be one of austerity with no additional resources available, it may not make sense for a manager to request a sizable increase in budget to cover a new initiative. In situations like this, the manager should fall back to his or her responsibility to inform upper management. Rather than asking for money, explain how the new initiative could generate positive bottom-line results for the organization. In this way the manager is seen not as someone asking for what is not available but rather as someone who is attempting to provide additional resources for the organization that can be used for a variety of purposes, including his own initiative.

If the manager in the physical therapy department is seeking funds to hire several therapists to support a new rehab initiative with a local employer, the best approach may not be to ask for money. Rather, engage in a conversation that goes something like this.

I know there is no money available this year for new initiatives, but I wanted you to know about an opportunity we discovered that, should we ever find some additional resources, might be worth our while. XYZ manufacturing company is looking for someone to provide rehab services for their workers. They're willing to pay a markup on our current prices for the services to be provided on site. It has the potential to generate $500,000 of added revenue. If we were to be able to add a couple of physical therapists, we could improve our bottom line.

Now the focus of the conversation shifts from a manager asking for money that is not available to a manager presenting an opportunity to improve the bottom line for the entire organization. It is a much more pleasant conversation. Depending on the financial results involved and the marginal profit associated with the opportunity, there may be enough bottom-line improvement to fund this initiative and others.

Occasionally, during the course of the meeting, a manager may encounter a "hidden agenda." This refers to the issue that one of the meeting participants wishes to discuss and share information about, but that was omitted from the formal agenda. Often the issue can be a volatile or controversial one in which this particular individual has a keen interest. To illustrate this, consider the following scenario.

The chief operating officer (COO), chief financial officer (CFO), and chief nursing officer (CNO), all of whom report directly to the chief executive officer (CEO), are meeting to discuss year-end performance compared with budget. Overall, the CNO has overspent the budget by about 2%. The COO has information indicating that supply consumption is considerably over budget and that usage of supplies, not price, is the culprit. There is no formal agenda for the meeting, but the COO's intent is to review the performance, surprise the CNO, and "suggest" that prompt remedial action is necessary. After the meeting has progressed beyond the preliminary stages, the COO deftly inserts the fact that his supply room personnel are having a difficult time keeping pace with nursing supply consumption by stating, "We can hardly keep your nursing units stocked with supplies. They're consuming supplies faster than we can deliver them! What exactly is going on there?"

Now the once-hidden agenda is no longer hidden. It is out in the open and on the table for discussion. The CNO will quite likely be challenged to explain supply consumption, defend it, if possible, and tell what steps

are being taken to correct the situation. In this scenario, the COO wanted to surprise the CNO in front of the CEO as a way to apply pressure to control supply spending. If resolving the problem were so important, it would have been far more effective to talk with the CNO in advance to make sure this issue was put on the agenda. In that way, the CNO could have prepared for the discussion and present the nursing perspective on it.

The importance of dealing appropriately with a hidden agenda cannot be overstated. One method is to review performance with an objective and critical eye and determine if there are any "skeletons in the closet" that might pose a problem. If there are, be prepared to explain and defend them and indicate the actions that have already been taken, or will soon be taken, to remedy the situation. Sometimes a pre-meeting phone call or visit can unearth a clue that an issue will surface unannounced at the meeting. If so, preparation can be made. In any event, do not be defensive or appear surprised. Treat the subject as if it was a planned agenda item and respond confidently. If the item is a surprise and could not have been prepared for in advance, turn the discussion back on the individual. Returning to the previous budget meeting discussion, the CNO might handle this surprise in the following way.

COO: "We can hardly keep your nursing units stocked with supplies. They're consuming supplies faster than we can deliver them! What exactly is going on there?"

CNO: "I am aware we have some issues with supplies, Bob." Then, turning to the CEO, "You know, Joyce, it's a shame we were not made aware that this issue would be on the agenda. We're as concerned as Bob is and have information that would be useful to this discussion. How about if I get us back together as soon as possible so we can resolve this issue?"

In this way, the CNO has turned the issue into a problem for the COO whose behavior now must be explained to the CEO. Remember, the CEO is the ultimate decision maker and arbiter of issues such as this. The best way to deal with hidden agendas is to avoid them entirely by fostering open communications and respect throughout the organization. Everyone shares in this responsibility.

Occasionally, a meeting can turn negative despite the best efforts of those taking part. If this happens, the best strategy may be to attempt to shorten the meeting by not engaging in a lengthy conversation about the problem issue. Rather, simple "yes" or "no" answers may be able to take

the wind out of the sails. The old adage from the Roman historian and senator Cornelius Tacitus that "he that fights and runs away, may turn and fight another day" is certainly applicable.

Where to sit in a meeting is a strategic choice. The presenter should always sit directly next to the person running the meeting or the person making decisions based on the meeting. This location is the most likely to avoid confrontation. Sitting at the far opposite end of the meeting table is the most confrontational position. It can also be helpful to have someone on the presenter's team sitting across from the main presenter with a clear visual connection. This person can keep track of what is being said and how the message is being received. He can signal the presenter subtly to reinforce a point, press an issue, and so on. It is often difficult in the midst of a busy meeting for the presenter to keep track of both what is happening and how it is happening. Dividing up the responsibility can be helpful to a successful presentation. Avoid the temptation in a budget meeting to present to the CFO when the CEO is running the meeting. The presentation should be made directly to the CEO, who is the ultimate decision maker.

Bluffing, spinning the facts, and outright lying are to be avoided. These destroy credibility and trust, to say nothing of a person's reputation. Health care is a small community, and problems with credibility and trust tend to follow individuals from one organization to another. They can also lead to a bad decision.

PRESENTATION QUALITIES

Any presentation, whether at a budget or unit performance review meeting or at a meeting of the local civic association, benefits from a confident, relaxed, and knowledgeable presenter. The effect is that the audience is more open to the presentation and less likely to challenge what is being presented. The cohesiveness of a unified presentation can be achieved only when the presenters have planned, rehearsed, and strategized about what is to be said, who will cover the various points, when certain facts will be used, what supporting documents will be presented, and so on.

Understanding the audience and their biases, expectations, and ability to comprehend what is being presented is essential for success. Information should be presented in a way that the audience will understand. This allows the presenter to concentrate his or her energy on the facts of the presentation without having to do too much audience education. If the presentation is to result in a decision, a few well-placed pre-meeting "sales calls" may be helpful in winning over some key members of the

audience before the meeting. Sometimes, the reaction of one of these individuals in the audience can sway others. A pre-meeting with finance team members to gain their support for a new business initiative can be very helpful in a meeting called to discuss the initiative. Being able to say, "we've already reviewed this data with finance and they agree with our numbers" can be very helpful. Further, the finance team can be consulted for help with any financial analysis and can check for errors of omission and commission.

A smooth delivery is essential to the success of any presentation. This can be accomplished only by practice. Rehearse the presentation. If several people are to present pieces of it, rehearse as a group. In that way, each person becomes familiar with what the others will be saying. The presenters will be better able to support each other during the presentation. Someone in the group can be designated to play devil's advocate during the rehearsal and challenge parts of the presentation to simulate the possible live reaction. If an individual is the sole presenter, then a colleague can fill the same role. In this way, the presentation will have been tested in private. Rehearsal prior to the real meeting can help discover problems in the handouts, missing facts, mistakes, and errors that can be fixed in order to avoid embarrassment during the meeting.

A good presentation benefits from an approach that includes the four B's and the three "tells." The four B's are as follows:

1. Be clear. Simple, uncomplicated messages are best. No confusing or complicated language or data.
2. Be concise. Get to the point quickly and avoid extraneous language and tangential conversations.
3. Be brief. Brevity is a virtue, and the time of many executives is limited. It is best to honor this by getting in, getting the presentation done expeditiously, and getting out so the executive can move on to other similarly pressing matters.
4. Be gone. Once the meeting has reached its conclusion, it is time to leave.

The three "tells" are as follows:

1. *Tell them what you are going to tell them*. Explain the reason for the presentation. This may be something like "we are here today to discuss the opportunity to open a women's health center in the Northwest community and examine the financial and clinical implications."

2. *Tell them*. Explain the clinical and financial implications that could include market share growth, spinoff business, revenue, expenses, and profit implications.
3. *Tell them what you told them*. "We looked at the financial situation, which is positive after the first year, and have identified the volumes for the center itself as well as anticipated growth in volume in pediatrics, urology, etc. We will be happy to take any questions and look forward to a favorable decision to proceed."

Managers make most of their presentations in formal meetings. But informal interactions can be helpful. What happens when the elevator doors open and a manager finds himself or herself on the elevator with the CEO? What should a manager say? "Hi Ms. Fischer, how about this nice warm weather?" This is a perfect opportunity to provide unfiltered information to the CEO. It is the perfect spot for the "elevator speech." This is a brief, attention-getting presentation, and every manager should be prepared at all times to take advantage of it. The focus should be on the manager' most important issue. This could be a new business opportunity, a staffing issue, a problem with the supply chain, or a novel customer service idea. The manager should know all pertinent facts about the issue.

The best way to begin is by grabbing the attention of the CEO with an opening statement that is hard to ignore. "Good morning, Ms. Fischer. Do you have a minute? I've been looking at an opportunity that could put about a half a million dollars on the bottom line. Would you like to hear about it?" The chance is pretty good that you will be asked to explain. Now, the seed has been planted. The CEO might schedule a follow-up meeting to review the opportunity. You might be asked to provide some additional information directly to the CEO. In either case, your opportunity now has significant visibility and a "friend" on executive row.

Educating the CEO about the department's current circumstances can also be served by the elevator speech approach. The manager should know the department's current operating facts (volume, revenue, costs, staffing levels, etc.) and be prepared to express a clear message about a departmental operating issue of significance to the manager.

Whatever the case, avoid the natural inclination to start at the beginning and build to a conclusion. Rather, the best way to do the elevator speech is to begin with the conclusion (this is the attention getter) and work back from that to the supporting details. Remember to sprinkle in short "sound bites" to make the conversation memorable.

In making formal presentations, a little bit of psychology can go a long way. To borrow from the vernacular, get "psyched up" about the presentation. A well-developed presentation that has been rehearsed and tested should result in a positive meeting. A presenter who truly feels confident, relaxed, and knowledgeable will infect the room with those same feelings.

Informational handouts can enhance a presentation by emphasizing the message and making it easier for the listeners to understand and remember. Examples include a list of actions that have been taken or are planned, a brief program description, or even the meeting agenda itself. The handouts should serve supportive purpose. Do not use a handout to state the obvious. A minimalist approach works best. A handout that tells only the number of nursing hours per patient day serves no purpose. However, a handout that provides a comparison with other institutions, national standards, and so on, or that shows a pattern or trend over time, can be very helpful in explaining the current state of affairs in the nursing department. It can be used effectively to support and justify a staffing budget request.

The best informational handouts are simple and tightly focused. They should be brief, using keywords in place of paragraphs. A telegraphic approach, employing bullets like advertising flyers, is better than a rambling narrative, which should be avoided. If a narrative must be used, the key words, phrases, and concepts should be highlighted so they stand out from the text. Make sure the handouts do not contradict each other. This can happen when several presenters split up the work of preparing the handouts—another good reason to practice everything.

Should the handouts be made into a booklet or distributed one at a time? There are pros and cons to either approach. The answer depends on the number of persons attending the meeting as well as the number of handouts used.

In a budget meeting, for example, which can have dozens of handouts, it is probably advisable to use a booklet (always number the pages) and distribute it at the beginning of the meeting. This avoids the disruptive process of distributing many individual handouts during the meeting. This is not to say that even with the booklets there will not be some individual handouts that the presenter holds in reserve in case a particular unscheduled issue comes up. The risk of the booklet approach is that some may not be looking at the right page at the right time. It can be more difficult to focus everyone's attention. Some people like to read ahead in the booklet and ask questions that are out of sequence with the presentation and can be disruptive. Tact must be used to suggest returning to the proper page.

The alternative approach, one-at-a-time distribution, should be used only when a few handouts are employed. The advantage is that attention can be focused on a single handout and a single issue without competition

from the rest of the handouts. To avoid any confusion, clearly identify handouts that look similar by using simple, straightforward titles. Construct informational handouts so the audience can understand them. The presenter must know the audience's baseline understanding of the subject and construct the handouts accordingly. A handout that only the presenter understands is worthless at best and may be harmful in the final analysis.

Rather than an anecdotal response, a facts and figures handout can help defend against a hidden agenda. It can be held until and unless necessary. This certainly would give the impression that the problem is not a surprise to the person being challenged and that a prudent manager is on top of the situation. Far better than tables and numbers, a good graph or chart can make a strong visual impression. The old adage "a picture is worth a thousand words" applies. Rather than merely comment that a recent change in price has affected patient volume, a graph will dramatically emphasize the point. Figure 14.1 shows increases and decreases in volume tied to price changes.

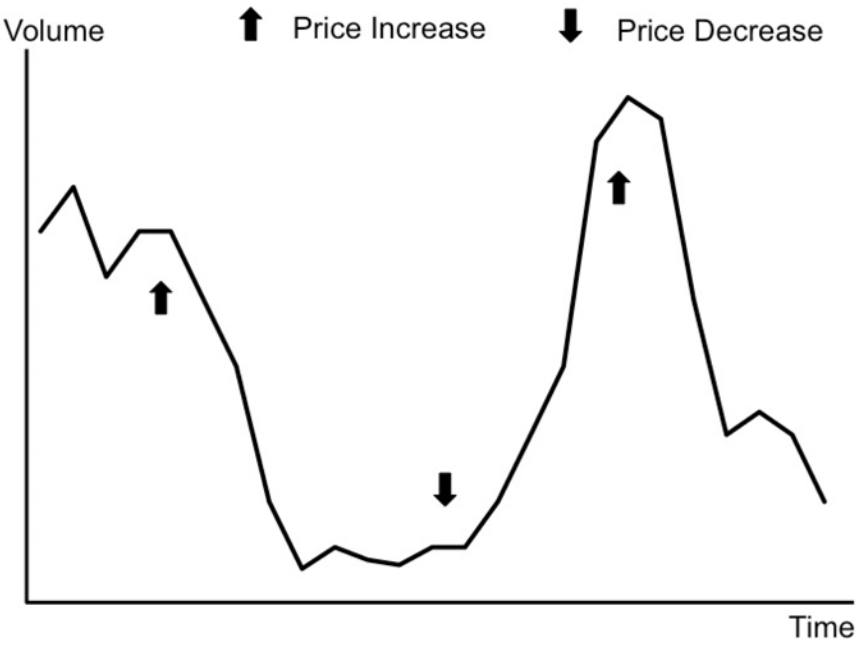

Figure 14.1
A graph such as this depicting patient volume on a timeline with three known price actions indicated by arrows can be effective in supporting an argument that patient volume is price-sensitive and that increases in price may result in a volume and revenue decrease. Further, it might be argued that a loss could result from the combination of decreased revenues and the failure to be able to shed fixed costs.

Graphs can be used in combination with tables of numbers to provide a handout that provides a comprehensive message. Because the eye is drawn naturally to the top of a page and since the graph is the more important of the two elements, put the graph at the top of the page and the table of numbers at the bottom. A graph can help visualize a pattern or trend that is not visible when merely looking at a table of numbers.

When preparing a graph, the choice of vertical or horizontal format should be a conscious decision. A vertical display emphasizes an upward trend, while a horizontal orientation minimizes that same trend. Figure 14.2 displays an upward trend using 10 data points in a horizontal orientation. The width exceeds the height of the graph.

Figure 14.3 displays the identical data in a vertical orientation. The height exceeds the width. Which trend looks more positive, the horizontal or the vertical? The human eye perceives the trend graphed vertically as having a greater slope and thus is seen as more positive despite the fact that the data are identical.

A manager whose customer service performance may be declining might defensively choose a horizontal orientation if asked to present on this subject as that minimizes the appearance of the downward trend. The selection of a vertical or horizontal orientation cannot make good news out

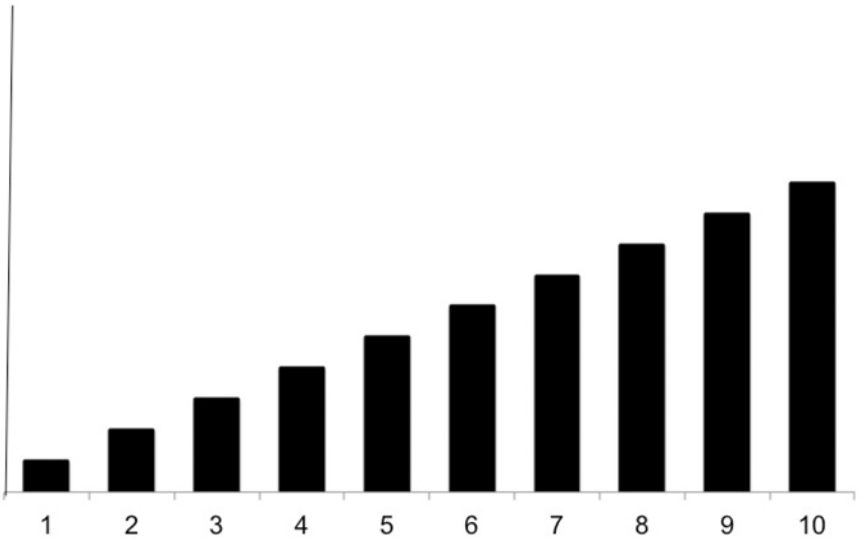

Figure 14.2
Data displayed in a horizontal orientation minimized the upward trend.

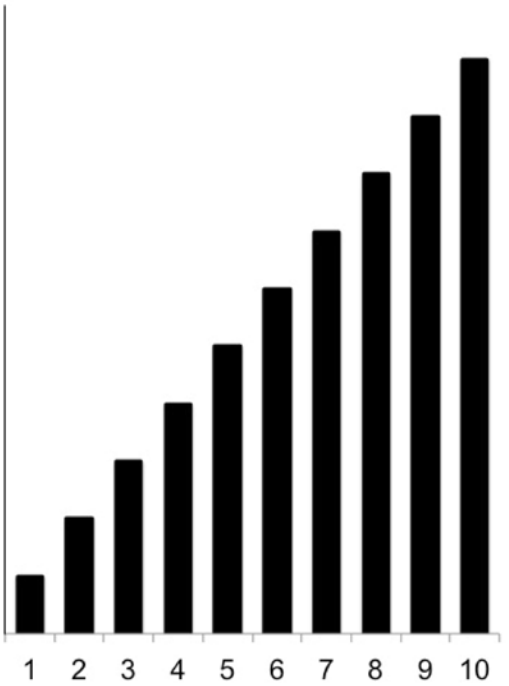

Figure 14.3
A vertical orientation magnifies the trend by increasing the slope of the bar graph.

of bad news, but it can emphasize or deemphasize a trend as the presenter wishes. Make sure the graph is easily understood. If a presenter is forced to spend a lot of time explaining what it means, its effectiveness is lost.

STRATEGIES FOR BUDGET MEETING SUCCESS

The primary strategy for success in a budget meeting involves understanding the expectations of upper management, constraints on the system, and the latitude allowed in managing resources. Understanding what is expected is critical to success. The budget to be negotiated must be consistent with upper management's expectations. Do not seek budget resources for a new program that is at odds with organizational goals and objectives. A request for funds to open and operate a methadone clinic will likely meet with disapproval if the overall objective of the organization is gradually to divest itself its substance abuse program. Further, such a request

may lead to a questioning of the manager's fundamental understanding of the organization and of his or her ability to be entrusted with resources. As mentioned previously, refrain from asking for resources that are not available. Constraints on the organization's ability to generate revenue because of competition, regulation, or general business conditions must be understood. If funds are available to support only 60 environmental services technicians, it serves no purpose to ask for 65 or 68. In essence, it is important to be realistic.

It is also important to understand the latitude allowed to individuals in managing the budget. Can a department manager convert the budget for contract services to salary dollars? Is a higher level of authority needed for such a change? Is emphasis placed on compliance with the budget on a line-item-by-line-item basis, or is overall performance against the total budget amount all that is considered? This must be understood because it defines a manager's latitude. Consequently, the style of management will differ based on the type of compliance that is mandated.

Managers always ask what they can do to get a bigger budget. There is no magic wand, no guaranteed formula for success. A manager's best friend is credibility—knowing the department (his or her business) better than anyone else, managing effectively, forecasting performance accurately, and reminding everyone, in a collegial manner, that what the manager had predicted did actually happen. It still does not guarantee a bigger budget, but it is highly likely to get the manager the best budget possible given resource constraints and organizational needs.

DEVELOPING A BUSINESS PLAN

When someone identifies a new business initiative or an opportunity to expand the current business, a business plan is used to pull together all the information needed to arrive at a proper decision: a go/no-go decision. Some business plans are relatively short and simple, while others are thick, comprehensive documents dealing with the complexities of the new venture. All of them must include certain basic information if they are to lead to a wise decision and, if approved, a successful entry into the new or expanded business. The following structure can serve as a guide in putting together the information for the plan and organizing it in a logical way that makes it easy to follow.

- Title (including a memorable tag line)
- Executive summary

- General current situation and background
- Business description
- Financial data
- Market data
- Contracting or negotiating strategies
- Marketing plan
- Appendix
- Implementation plan

The title should be a short name for the business described in the plan. This could be titles such as "Developing a Health Center for the Southwest Community," "A New Approach to Population Health," or "Improving the Patient Experience at Memorial Community Hospital." As with many large corporations, this title can be accompanied by a tagline that is memorable. Just as GE used "We Bring Good Things to Life"™ and Panasonic used "Just Slightly Ahead of Our Time"™, the population health initiative might use a tagline like "Healthy People, Healthy Harperville" or some other short line that helps jog people's memories about the initiative. Depending on the circumstances, these taglines can even be humorous. Most people would remember an initiative to improve the admissions process if the tagline was "You'll be in a bed before you're dead."

An executive summary should provide a condensed version of the business plan. This should include key takeaways from the business description and the essential financial data. While the business description will be mostly a narrative, the executive summary will be largely telegraphic in nature so that the reviewer can understand it without having to spend hours digging through it.

Telegraphic means using bullet points like those seen in store flyers, little facts that help "sell" the product to the consumer:

- 40 meg hard drive
- 2 floppy disk drives
- uses 16 D-Cell batteries (not included)
- some assembly required

Anything that can be done to reduce the time needed to comprehend the value and importance of the initiative and support a sound business decision should be considered. If the business plan is being circulated

digitally, a video demonstrating the new process, the new patient flow pattern or how a technology works or a link to a website can be considered. An alternative approach to the executive summary is to write an abbreviated executive summary at the front of the plan and then precede each section with its own brief summary.

The current operating situation from which the initiative springs and a general background discussion should follow the executive summary. This provides a fact-based and situational foundation for the business plan. Recent developments in clinical care, scientific breakthroughs, shifts in population, and changing demographics are examples of the content of this section. Often, this section provides the rationale for the initiative. A significant and rapid growth in the elderly as a proportion of a hospital's service area leads logically to a business plan that involves the opening of a geriatrics care center. Changing reimbursement rules may be the driver for an initiative that involves shifting care from the inpatient to the outpatient setting. For a program driven largely by legislative and regulatory changes, it is not necessary to include copies of the legislation and all of the regulations. Instead, pertinent excerpts, summaries, and references can be included. The legislation and the bulk of the regulations, if they are deemed necessary, can be included in an appendix referenced in this section.

The most important element of the business plan is the business description. Provide a detailed description of the services that are going to be offered as part of the new business. The description should be detailed enough that those reviewing the plan can understand the intent and are informed enough to ask appropriate questions about its feasibility. When faced with a complex problem or decision, people tend to reduce it to a level at which it can be easily understood. Remember this and make sure the narrative is easy to follow and understand. Avoid complicated phrasing. Plain language works best.

Operational issues dealing with how the business will function should be explained. This is particularly important if the new business is somehow different from the existing business. Also describe how the new initiative fits with the current book of business, how it is consistent with the strategic plan, how it is likely to be received among potential customers, the obstacles to be faced in the marketplace, and the likelihood of success.

While the financial analysis will be included in its own section of the business plan, a number of non-financial analyses should be included with the business description section. These include market analysis and

SWOT and PEST analyses. Market analysis looks at patient demographics, competitors, access issues, population density, and the like. A PEST analysis will examine political, economic, social, and technologic issues that may impact the initiative. These can include antitrust laws and employment issues, general economic environment, community attitudes regarding health and health care, and the impact that the technology and technological advances can have on the provision of services. A SWOT analysis looking at strengths, weaknesses, opportunities, and threats both internally and externally should be prepared objectively and honestly.

Decision makers are likely to have different perspectives and be looking for different things. The CEO is likely to be interested in the overall organizational impact. The CFO, on the other hand, may focus only on the financial ramifications contained in the business plan. Board members, because of their fiduciary responsibility, are likely to be more interested in the impact an initiative will have on the community they represent. Physicians who are reviewing the proposal will have a keen interest in the clinical aspects.

As was the case in preparing for a budget review meeting, a visit to finance may be worthwhile to gain the team's support for, and even collaboration in preparing, the financial section of the plan. Finance will understand what the global issues are from the P&L perspective and can help craft the analysis in such a way that it is more comprehensive and better suited to the decision-making process. Do not lose sight of the power of anecdotes and vignettes. Decisions are made, as they must, on the basis of facts and hard data, but vignettes paint a compelling picture and provide a human dimension to what could normally be a very boring narrative.

The clinical, operational, and financial impacts covered in the business plan should be thoroughly discussed. Obviously, a clinical initiative should speak to the impact on patient care, length of stay, population health, infection rates, and so on. Even those initiatives that are not clinical in nature may actually have a bearing on clinical services. A robotic system designed to increase productivity and efficiency in the pharmacy will have a clinical impact that should be discussed.

Operational impacts that should be discussed include throughput times, patient satisfaction, staffing requirements, and response rates. Because more detailed information will be provided in the financial section of the business plan, only a high-level mention is needed here, stating only the impact on the bottom line. Leave the details of that for the financial section. Move the narrative from the clinical to the operational and, finally, to the financial aspects. The business of any health care organization is

fundamentally clinical in nature. The finances are the end results of everything that is done clinically and operationally.

A business plan will always elicit questions. Write the narrative to answer as many of these that can be anticipated as possible. Having colleagues read the plan in its development stage can help this effort. Explain how the initiative represents good science. Does it represent an advance in clinical care, or is it a fad that may quickly pass? If it is not good science, why is it being pursued? And if it is good science, it should be fairly easy to demonstrate that fact by citing the clinical literature.

The narrative should anticipate questions about the new market opportunities and potential spinoff business growth. It should talk about the potential to fill appropriate gaps in a continuum of service. Just because an organization does not currently provide a service does not mean it should. Not every hospital should provide trauma care or transplantation services. The logic of filling such a gap should be discussed thoroughly and documented completely. The overall tone should deal with how the initiative will improve things for the organization, for the community, for workers, and so on.

Two final questions should be addressed in the narrative. Why is this initiative so important, and why should resources be devoted to this and not to something else? While hard numbers are used to answer all other questions, for these questions, the writer's passion comes to the fore. This is where the narrative departs from the facts and figures and moves to the emotions. The discussion of offering a new limb-lengthening program moves to the story of "Little Jimmy" who, by virtue of the investment in such a program, will be able to play soccer for the first time. This is where salesmanship pays off. This is the place to express how the initiative will impact people.

A financial narrative and the hard financial data and analysis follow the business description. The narrative portion should describe in general terms the changes in volume, revenues, expenses, and profits. This should cover increases in new volume and, perhaps, decreases in current volume. It should also cover pricing and issues associated with collections for the new service. Some new services are not immediately covered by insurance, especially if they are considered to be experimental or research based. Financial analysis is always based on net revenue.

Operating costs should be discussed, again, in general terms. This includes the types and numbers of staff, salary and fringe benefit costs, supplies and purchased services, maintenance costs that will be incurred over the life of the initiative, depreciation (if an equipment purchase is involved), and rent (if space or equipment leases are involved).

Since many new initiatives and programs begin slowly and gradually ramp up over time, this discussion should explain how the various elements will grow over time. The timing of staff additions (year one, year two, etc.), the possible inclusion of maintenance in the purchase price and the need to renew the contract after the first year, and how rapidly volume will grow are just some of the items that should be discussed.

In addressing equipment and facility costs, be sure to speak with the experts in the facilities management and engineering departments. Since infrastructure support is essential to the installation and operation of sophisticated equipment, they alone can identify the costs that are involved. They may also be able to speak to the practicality of the equipment, its maintainability, and lifecycle costs. Because revenue and profit do not automatically correlate with cash flow, the implications for the organization's cash inflows and outflows should not be forgotten. The lag time between the first outlays of cash for equipment, staff, and supplies and receipts of cash from bill payments may be many months. The organization will need to cover this cash flow gap from cash reserves. The finance staff should not be caught off guard.

This narrative leads into the analysis portion that contains the hard data on volume, revenue, expense, and profit. A variety of decision analyses will be found here. These include as a minimum a three- to five-year marginal P&L with ROI calculation. If the business plan is dealing with an investment opportunity, it should also include a benefit/cost ratio analysis. Breakeven analysis will be helpful in dealing with sensitivity around volume and growth. Performance trends over time can also be helpful in showing how a similar initiative has performed in the past or how the new initiative will impact overall financial performance. While the past is no guarantee of future performance, it can help instill a certain level of confidence.

If an equipment purchase or facility modifications are involved, depreciation will need to be included in the analysis. Rent is used if equipment and space are leased instead of purchased. All of the data can be shown in tables, while some of the data would benefit from the use of graphs to illustrate either relationships (e.g., volume and revenue) or trends and patterns. Table 14.1 indicates which data can be put in a table and which would benefit from a graphic presentation as well.

Depending on the nature of the proposal contained in the business plan, a discussion of contracting strategies and the approaches to marketing the venture should also be provided. Prior to approval, little effort will be expended on these topics, but the discussion should cover the topics in general terms and is likely to be telegraphic in nature.

Table 14.1
Tabular versus Graphic Presentation

Financial Element	Table	Graph
Volume	X	X
Price data	X	
Collection rates	X	
Revenue	X	X
Staffing	X	
Salary and fringe benefit costs	X	X
Supply costs	X	X
Purchased services	X	X
Depreciation	X	X
Space or equipment rent	X	X
Profit or (loss)	X	X
Equipment purchase price	X	
Facility renovation costs	X	

The business plan's appendix will contain a variety of information. Architectural renderings and floor plans, detailed equipment specifications and photographs, and "wiring" and "bubble" diagrams illustrating how things work and various relationships are just a few of the things that are best put in an appendix and merely referenced (e.g., "as depicted in Appendix IV…") in the narrative of the plan. This approach keeps the plan's narrative from becoming bogged down with too much detail.

Throughout the plan, the structure of the narratives should be pyramidal in nature, moving from the summary to the minutia via a series of paragraphs and sections that provide increasingly more detailed information. Figure 14.4 displays the outline of such a narrative pyramid.

Using this approach, the readers have a choice of how much detail they want. Not everyone needs to understand the smallest details of the initiative.

An implementation plan is a good way to close the business plan. It will describe the work that must be done to make the proposed venture a reality, the people who will be involved in the implementation, the timeline, and mileposts along the way. In short, it will list all the actions that must take place and the schedule for each of them. Another reason to include an implementation plan in the business plan is that it indicates a level of confidence that the plan is going to gain approval, and having done so, people are ready to move forward and make it a reality.

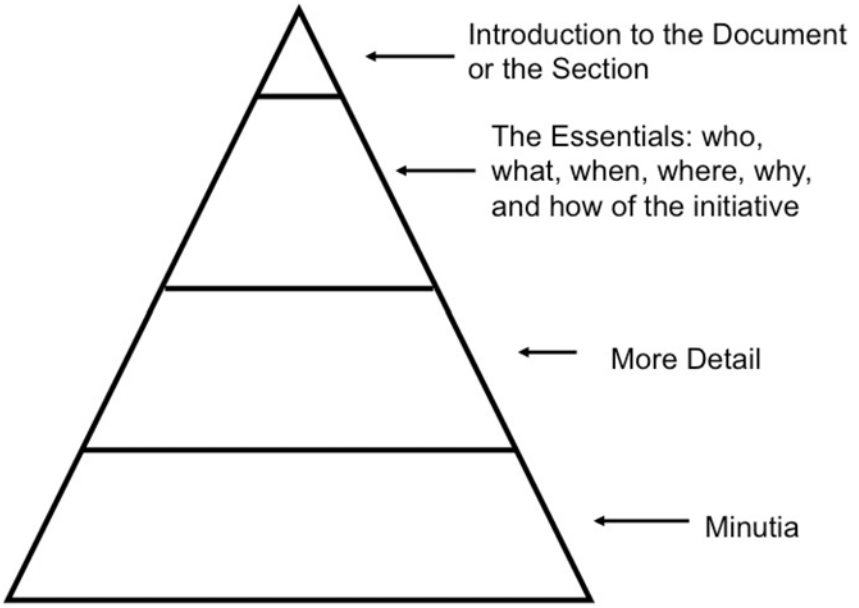

Figure 14.4
Using the pyramid style that is employed by journalists, the most important information goes to the top of the narrative, with less important information presented further down.

IMPLEMENTATION AND ACTION PLANNING

Work plans should always be tied to achievement of specific objectives in two broad categories. Implementation plans deal with new program initiatives, systems installations (e.g., new monitoring systems, robotics, information technologies), organizational integration (centralizing patient transportation, implementation of a health system-wide supply chain system, etc.), and the like. Action plans generally deal with remedial action associated with performance improvement. This can include such initiatives as improving customer satisfaction scores, reducing OR turnaround time, and reducing the walkout rate in the emergency department. The two are quite similar and are often discussed interchangeably.

Both plans begin with an identification of what is to be achieved. In this regard, specifics are essential. Begin with a broadly stated goal (Improve the Patient Experience). This goal is followed by a series of objectives that lay out what is to be accomplished. Rather than strive to "improve customer satisfaction scores," SMART (Specific, Measurable, Achievable,

Relevant, and Timely) objectives should be used. Continuing the customer satisfaction example, the objective would be better stated as "Improve customer satisfaction scores to 95% in the very good or excellent level by June 30, 20XX." Having this specificity and time dimension makes it easier to develop the strategies and tasks that are required to achieve the objectives.

Objectives, strategies, actions and tasks, time frame and interim deadlines, resource needs, and an accountable party should support each goal. These can be arranged in a grid-like format that can facilitate understanding and make comprehension easier. Figure 14.5 illustrates one such format.

With an overall goal of improving the patient experience, this plan begins with specific objectives and one or more associated strategies. A series of actions are listed to achieve each of the strategies. All actions should be listed in detail, avoiding summary statements. Task 2a in Figure 14.5 (recruit and hire patient advocate) is too broadly stated. Instead, several tasks should be listed: develop job description, "comp" the job (determine the appropriate pay range), post the position for internal candidates, and so on. Each task should be assigned a time frame and deadline date, resources needs, and accountability.

The time frames and deadlines should be both specific and realistic, taking into consideration the length of time needed to complete the various tasks. If the amount of time needed to write the job description is two weeks, and it takes four weeks to comp the job, an internal posting cannot happen three weeks after starting to write the job description. Further, the tasks should be sequenced properly. The fact that Task 1b takes only 90 days does not mean it can be completed before Task 1a. It will need to wait until after the system is installed. Wanting to move quickly, while a virtue in many cases, must be carefully weighed in setting deadlines. Wanting a task to be finished by October 1, for example, does not mean it can be finished by then. If it takes six months to complete the task and today's date is July 1, an October 1 deadline will never be achieved. Some things take a specific amount of time, and no amount of added resources or pressure will change that.

Because resources are generally constrained, some amount of compromise will likely be sought. Be careful not to agree to an amount that is insufficient for the project at hand. If the idea is to provide a triage nurse 24 hours a day, 7 days a week, nothing less than five FTEs ($365 \times 24 \div 2{,}080 \div 85\%$ productivity rate) are required. Anything less than that will result in coverage gaps, and the objective and ultimate goal associated

Overall Goal: Improve Patient Experience					
Objectives	Strategies	Tasks and Actions	Time Frame and Deadlines	Resource Needs	Accountability
A. Improve average satisfaction score to 9.2/10 by June 30, 20XX	1. Better scheduling system	1a. Install scheduling system in clinics	Six months from "Go/No Go" decision	$1,726,300 for systems hardware and software	Director of IT Systems
		1b. Develop smartphone app to support scheduling	90 days after completion of system installation	$100,000 contract with ABC Apps, Inc.	Software Development Supervisor
	2. Personalized patient attention	2a. Recruit and hire patient advocate	90 days to recruit	1.2 FTEs for full coverage	Maggie Fischer—Human Resources
		2b. Train patient advocate	30 days orientation/training		Clinic manager
		2c. Implement patient tracking system			
B. Reduce clinic visit door-to-door time by 45 minutes within 3 months	1.	1a.			
		1b			
	2.	2a			
		2b			

Figure 14.5
An implementation/action plan grid displays the various strategies, actions, resources, and other elements in a way that is easy to follow.

with the resources may not be achieved. By the same token, asking for eight or nine FTEs is not prudent—that will waste resources needlessly.

The last item in the grid is accountability. Individuals who will get the credit and rewards for success and the blame and consequences for failure are listed. Never list groups (HR department), as there is no accountability in a group. If the work is not finished, exactly who in HR is going to be held accountable? Instead, for example, list Anthony Pellicano, chief of the Compensation and Benefits section, in HR as the accountable individual. If the job description is "comped" in accordance with the schedule, he gets the credit. If it is not finished in time, he, not the department in general, bears the consequences. And there must be consequences. Naming people accountable but not holding them to account means there is no real accountability. Without accountability, the entire management success paradigm falls apart.

Once the plan has been approved, implementation begins. The person managing the implementation should convene a meeting of the individuals involved to review the plan. Its tasks, timelines, and deadline dates should be reviewed, confirmed, and agreed upon once again. From this point forward, the person managing the implementation must monitor it, exercise appropriate accountability, and make periodic adjustments along the way to completion. The timeline should be carefully crafted to be achievable, but it should be an aggressive one that achieves the stated objectives as quickly as possible. Do not rush willy-nilly, but needless delay should not be tolerated.

As illustrated in Figure 14.6, interim deadlines and mileposts must be built into the schedule to facilitate constant monitoring of progress. In addition, it is always prudent to leave a brief amount of time at the end of the timeline for last-minute "surprises" and other unplanned delays. If a project is scheduled to be finished by December 1, aim for completion by November 1 and then build in a 30-day contingency buffer to guard against the unexpected. In this way, an unplanned two-week delay in late October will not totally derail the plan.

The best way to construct the timeline is to begin not at the start date but rather at the required completion date. Work backward from that date. In this way, a sense of urgency is built around the deadline and people are far less inclined to put things off. Tangential discussions at work sessions, which can delay or derail progress, can be effectively managed.

In managing an implementation project, make sure the stakeholders are on board with the approach that is being taken, the timeline, expected outcomes, and the objectives. They are keenly interested and their support is essential to success. One category of stakeholder is especially

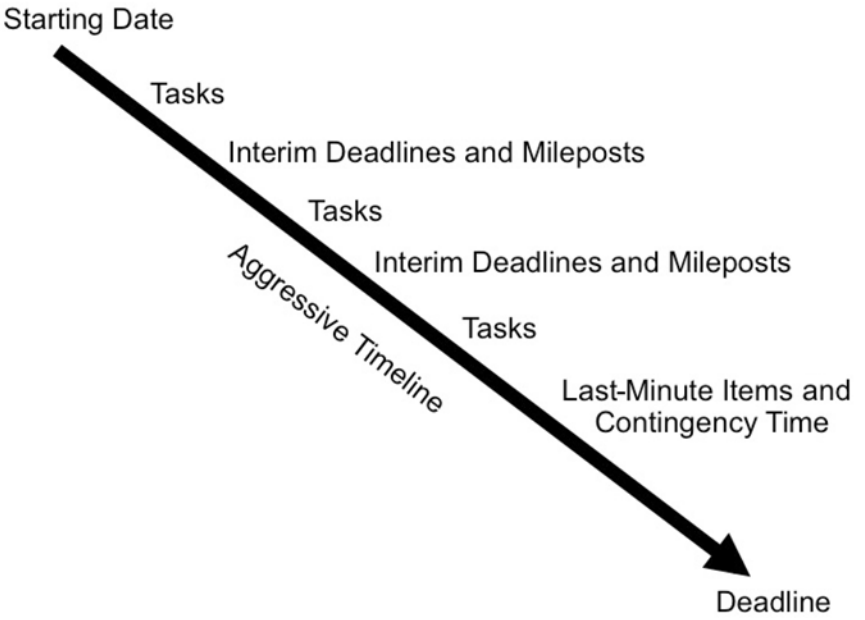

Figure 14.6
A proper timeline for managing any project will always include some contingency time at the end as a safeguard against unplanned occurrences.

important—the critical players. These are the members of the stakeholder community who can "make it or break it" in terms of success. A CFO, for example, who sees no value in a particular project is a critical player—in making it difficult, if not impossible, to achieve the objectives. Conversely, if he or she feels the project is essential, support from finance could overcome a number of obstacles.

When working with groups, remember that everyone has biases. Some prefer high-tech solutions, while others prefer the human touch. The biases in a group can be used effectively to make sure that any solution has been thoroughly discussed from all perspectives. A balanced, "best of both worlds," approach is the best.

Consideration should be given to the workload of those involved in the group. While a physician may not have the time to chair a group, on occasion, his or her position in the organization dictates that he or she be named as chair. In such a situation, it may be prudent to appoint an administrator as cochair. This person can guide the group in the absence of the physician, but can also do a lot of the behind-the-scenes work that a physician may not be well versed in or comfortable doing. If the chief of surgery, for instance,

is chairing a group that is implementing a new OR scheduling system, her attention to the project may be compromised by her case schedule. An administrator cochair could run the group while the physician chief serves as titular head of the group and uses her position in the organization to get the necessary buy-in from stakeholders and critical players.

Though they may not be members of the work group guiding the implementation of a business plan, champions, informal leaders, and change mentors are important resources that should be involved. Champions are those members of the organization who are super supporters of the plan. They can be used as ambassadors to affected departments, talking up the value of an initiative, dealing with the "what's in it for me?" questions that always seem to arise and which can derail a project. Buy-in is essential, and champions can deliver it. The same is true of the organization's informal leaders. These are people who are not pictured in the organization chart. Their names do not appear on the roster of leaders and managers, but, nonetheless, others look up to them in the organization. If they are in favor of the initiative and support it, others will as well. Change mentors are those who have experienced a similar change, program implementation or project. They can help others who have no experience and can encourage them that the changes are possible and that they will make the organization better. The use of champions, informal leaders, and change mentors can quicken the pace of a project and make implementation easier. Finding people who can play these roles is an important first task for the person heading up the project.

Chapter 15

THE BUSINESS CASE FOR QUALITY AND PATIENT SAFETY

Perhaps the most important challenge facing the health care delivery system is the dual issue of clinical quality and patient safety, quality for short. Quality drives everything. It is associated with throughput efficiency, patient and provider satisfaction, reputation, volume, revenue, and profit. Ironically, providers are often asked to make the "business case" for improving quality. Why must a business case be made for not needlessly killing people because of health care mistakes and errors?

CONNECTING CLINICAL QUALITY IMPROVEMENT AND FINANCIAL OUTCOMES

Patients admitted to a hospital or other health care provider organization take one of two pathways. Either they can follow a pathway free of mistakes and move quickly through the care process, or they can follow a pathway where quality issues slow their progress. Problems with quality delay patient progress. Length of stay goes up, throughput time rises, complications go up, outcome measures and satisfaction scores go down, and, from a business standpoint, financial performance goes down as well.

In short, the key to successful financial performance in health care has nothing to do with debits and credits and everything to do with quality. Success comes down to improving patient throughput. How can more patients be moved through the system? Just as a water pipe is checked to make sure there are no clogs, health care organizations should check to make sure there are no quality clogs to impede patient progress. Consider the following scenario.

A husband and wife and their children are sitting in the den on a quiet winter day enjoying a lovely fire in the fireplace, perhaps reading the newest bestseller or playing a video game, and enjoying the view out the window where the snow

is gently falling. It is a scene reminiscent of a Currier and Ives lithograph. One of the children excuses himself and goes upstairs to use the bathroom. A short time later the sound of the flushing toilet fills the air, followed seconds later by a scream: "Mom, Dad, the toilet's overflowing!"

After mopping up the mess, what should be done to solve the problem? Should a bigger toilet bowl be purchased from the local plumbing supply store, or should a plumber be asked to clean out the existing pipes? Most people would call the plumber because a bigger toilet bowl merely means that the next time there will be more water and a bigger mess.

Health care organizations, hospitals in particular, often head to the plumbing supply store. When emergency departments (EDs) are chronically full of patients who wait interminably to be seen, the solution is to expand them in size. The result is an expenditure of millions of dollars that results in even more patients waiting to be seen! The real problem has not been solved. Poor inpatient bed turnover blocks the flow of patients out of the emergency department. Improving bed turnover will empty the emergency department faster and avoid millions of dollars in expansion costs. Patients will not have to wait as long. A focus on quality can improve inpatient bed turnover, which in turn improves patient flow through the ED.

The prevalence of injury and death associated with hospital mistakes has been in the forefront since the Institute of Medicine published "To Err Is Human" in 1999. It reported that nearly 100,000 people die each year as a result of mistakes made in hospitals. Another study in 2013 published in the *Journal of Patient Safety* places the amount in the range 210,000–440,000.[1] By comparison, there were only 16,238 homicides[2] and 33,783 motor vehicle deaths[3] during a comparable period of time. The Centers for Disease Control and Prevention reported that in 2011, approximately 75,000 deaths were attributable just to health care–associated infections.[4] As Steven J. Spear opined nearly a decade ago, "Today, you are about as safe in a U.S. hospital as you would be parachuting off a bridge or a building."[5]

With these statistics as a backdrop, providers wonder why they must develop a business case to do better. Nonetheless, they are asked to demonstrate business improvement for rapid response teams, comprehensive unit-based safety programs, and other similar initiatives. But how much improvement can a single initiative generate? Does it make financial sense in an era of scarce resources to spend an added $50,000 for better patient slippers that can reduce falls and injuries? In pursuing quality-enhancement initiatives, what arguments will the finance staff accept?

To successfully answer these and similar questions and build a workable, realistic business case, it is necessary to understand the process of

care, the misleading nature of some of the clinical literature, and the health care business model.

THE PROCESS OF CARE

The way in which care is provided, whether at a hospital, physician office, or stand-alone endoscopy center, involves the orchestrated application of caregiver knowledge, skills, and expertise; technologies; and supplies and medications. It is a process as opposed to a single intervention or a series of isolated events. In reality, it is a system and should be managed as such with consideration and attention paid to all aspects, not just one or two. Often, however, care is thought of as a lone encounter with a provider. Far from it, it involves a series of departments, support players, and systems that all happen to come together as, for example, a physician examines a patient in an exam room. It may involve the clinic appointment system, registration and sign-in, a nurse encounter prior to the physician, the patient chart, perhaps a simple blood or urine test, and, finally, the physician. All of this must be orchestrated in order to be successful.

This connectedness can be thought of as a spider web. Whenever and wherever a fly lands on the web the spider knows lunch is served. And the spider knows if it is a big meal or a small snack. This is because the web is fully connected. Each strand of spider silk is connected to all the others, and information flows throughout. The spider manages this system to its advantage.

If the strands of silk are disconnected, even if many flies land on the web, the spider will starve because there is no communication, no information flow. Hospitals and other health care organizations work the same way. They need communication and information flow in order to work effectively. This connectivity works well for those trying to "make the business case" for any quality or patient safety initiative. Any initiative, even a small one "isolated" to a single department, can have a major organization-wide impact because of the connectivity. An initiative in the surgical ICU that reduces ventilator-associated events (VAEs) can have an impact on several other departments: the post anesthesia care unit, the ORs, the emergency department. The financial impact on all of these departments can be determined and accumulated to make the case.

THE MISLEADING LITERATURE

The clinical literature sometimes does a disservice to providers attempting to make the case. Suggesting that this initiative or that can reduce operating costs is misleading at best and harmful to quality improvement efforts at

worst. Articles that preach operating cost reduction as the payoff for improving quality should never be used to make the case. As discussed in Chapter 3, the vast majority of operating cost is fixed and does not go away if a patient goes away. Consider the surgical ICU that wishes to pursue a VAE initiative. The physician director cites the latest clinical article that suggests that each ventilator-associated pneumonia prevented can reduce hospital cost by $56,000. With the unit's costs being on the order of 95% fixed, exactly what costs will disappear? Will a nurse be sent home without pay?

Contrary to what the literature claims, for example, methicillin-resistant Staphylococcus aureus (MRSA) screening does not reduce hospital operating cost. In fact, it increases it. The depreciation on the instrument and the cost of lab supplies increase operating cost. By eliminating patient-to-patient transmission, however, such screening procedures reduce the incidence of hospital-acquired infections (HAIs), promote faster case throughput, and allow more cases, and more revenue, to flow through the organization.

The fault with literature like this is that the authors look not at cost but at charges. The cost reduction they speak of is a reduction in the cost to the payer, not the provider (see Figure 2.2). Cost reduction in this context is much like a unicorn—often spoken about but never seen. Instead, look to the opportunity presented by the empty bed. In a 2010 article that identified the folly of looking for cost reduction, Nicholas Graves and his colleagues looked at the issue of cost reduction associated with HAIs and pointed out that hospital executives " are disappointed when the reduction in the number of HAIs does not yield the anticipated cost savings." Instead, the authors advise " seek the opportunity."[6] The opportunity cost is the revenue that has been foregone by keeping a bed filled needlessly because of an HAI. Another patient with his or her associated case-based revenue could fill the bed.

Consider the case of a 67-year-old Medicare patient admitted for coronary artery bypass graft (CABG) surgery. A hospital will be reimbursed at $45,000 for the case (note: all monetary values are for illustration purposes only and do not represent actual amounts paid or the true cost of any procedure or supplies) with its expected length of stay of approximately seven days. On day four, however, the patient spikes a fever to 103° because of an HAI. Rather than being discharged on the seventh day, the patient lingers in the bed for a total of 21 days. In that space of time, the hospital was reimbursed $45,000. The extra care was not paid for. The opportunity in this instance is the two added CABG patients who could have occupied the bed and brought in another $45,000 each of revenue. The opportunity cost of this misadventure is $90,000.

Even a fee-for-service patient has a revenue opportunity. Charges are generally lower on the HAI days than on the noninfected patient days. This is because active treatment for the admitting diagnosis is usually suspended while the infection is fought. The resources consumed and the associated hospital charges are lower on these days. The data listed in Table 15.1 illustrate this phenomenon. The activity in two inpatient beds is displayed over 20 calendar days, with occupancy by noninfected patients shown in the left columns and infected patients in the right columns. On the left, four patients are admitted and discharged without infections. The average length of stay (ALOS) is five days. Charges total $150,000 for the

Table 15.1
Comparison of Charges—Without versus with Infection

Average Daily Charges without a Hospital-Acquired Infection		**Average Daily Charges with a Hospital-Acquired Infection**	
Patient 1, Day 1	$7,500	Patient 1, Day 1	$7,500
Patient 1, Day 2	7,500	Patient 1, Day 2	7,500
Patient 1, Day 3	7,500	Patient 1, Day 3	7,500
Patient 1, Day 4	7,500	Patient 1, Day 4	7,500
Patient 1, Day 5	7,500	Patient 1, Day 5	7,500
Patient 2, Day 1	7,500	Patient 1, Day 6	3,000
Patient 2, Day 2	7,500	Patient 1, Day 7	3,000
Patient 2, Day 3	7,500	Patient 1, Day 8	3,000
Patient 2, Day 4	7,500	Patient 1, Day 9	3,000
Patient 2, Day 5	7,500	Patient 1, Day 10	3,000
Patient 3, Day 1	7,500	Patient 2, Day 1	7,500
Patient 3, Day 2	7,500	Patient 2, Day 2	7,500
Patient 3, Day 3	7,500	Patient 2, Day 3	7,500
Patient 3, Day 4	7,500	Patient 2, Day 4	7,500
Patient 3, Day 5	7,500	Patient 2, Day 5	7,500
Patient 4, Day 1	7,500	Patient 2, Day 6	3,000
Patient 4, Day 2	7,500	Patient 2, Day 7	3,000
Patient 4, Day 3	7,500	Patient 2, Day 8	3,000
Patient 4, Day 4	7,500	Patient 2, Day 9	3,000
Patient 4, Day 5	7,500	Patient 2, Day 10	3,000
Total charges	$150,000	Total	$105,000
Average charges per calendar day	$7,500	Average charges per calendar day	$5,250
Average charges per case	$37,500	Average charges per case	$52,500

bed for the 20 days. In the same span of time, the second inpatient bed can accommodate just two patients who are infected. Their ALOS is 10 days. This bed generates charges of just $105,000.

Note that the average charge per case—the cost to the payer—is significantly lower without an infection ($37,500 per case vs. $52,500 per case). This is the source of the error in the clinical literature. Those authors see this drop and mistakenly claim the hospital has lowered its cost. But the cost is not lower for the bed without infections. Only the charges per case are lower. The benefit to the hospital is that the total revenue is higher because four patients with their higher average daily charges occupy the bed instead of the infected patients with their low average daily charges. This is the kind of opportunity that Graves speaks of in his article.

THE HEALTH CARE BUSINESS MODEL

This can perhaps be seen more clearly in this graph displayed in Figure 15.1. Notice that cost rises slightly as volume increases. This slight uptick in cost

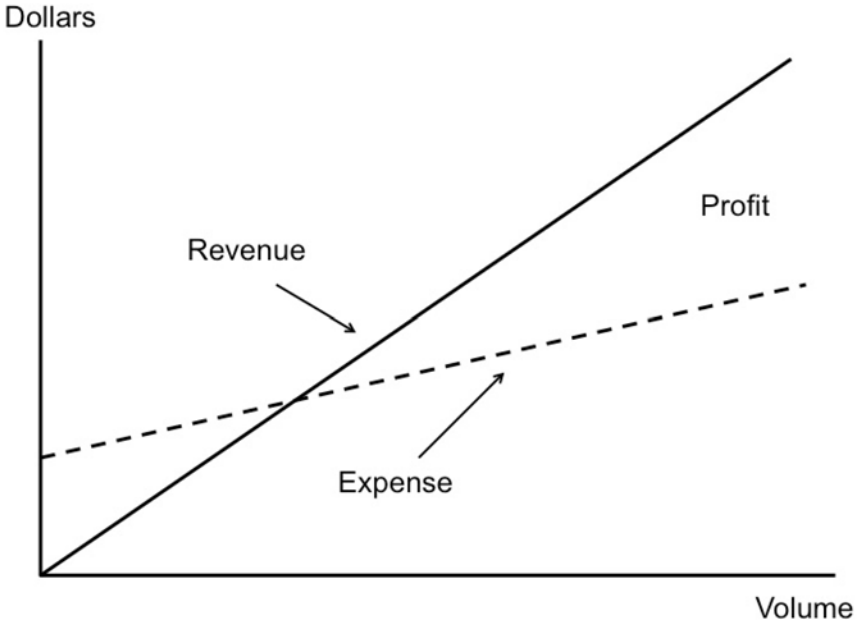

Figure 15.1
Revenue and cost grow and shrink at different rates as volume rises and falls. Since revenue grows faster, increases in volume lead to increased profits.

results from the fact that just a small proportion of cost is variable with volume. Notice, too, that revenue rises sharply as volume increases. This is because revenue is 100% variable with volume. The gap between revenue and cost grows wider as volume increases. That gap is profit.

Because of this revenue and cost dynamic, the payoff for quality and patient safety initiatives lies in their ability to improve patient throughput by eliminating errors and delays in care. As volume grows because of these initiatives, the gap between revenue and cost, profit, grows as well. Volume is the most effective strategy for improving bottom-line performance in high fixed-cost businesses like health care organizations.

The way quality works to improve the bottom line may seem to some to be a convoluted journey, but it is relatively straight forward, as illustrated in Figure 15.2. Increased quality leads to a reduction in ALOS by eliminating mistakes that delay patient progress. The reduced ALOS allows for an increase in bed turnover. The same number of beds can accommodate more cases. The increase in turnover assumes that some amount of the emptied beds will be backfilled by new admissions (any level of backfill will result in increased turnover). It also assumes that the

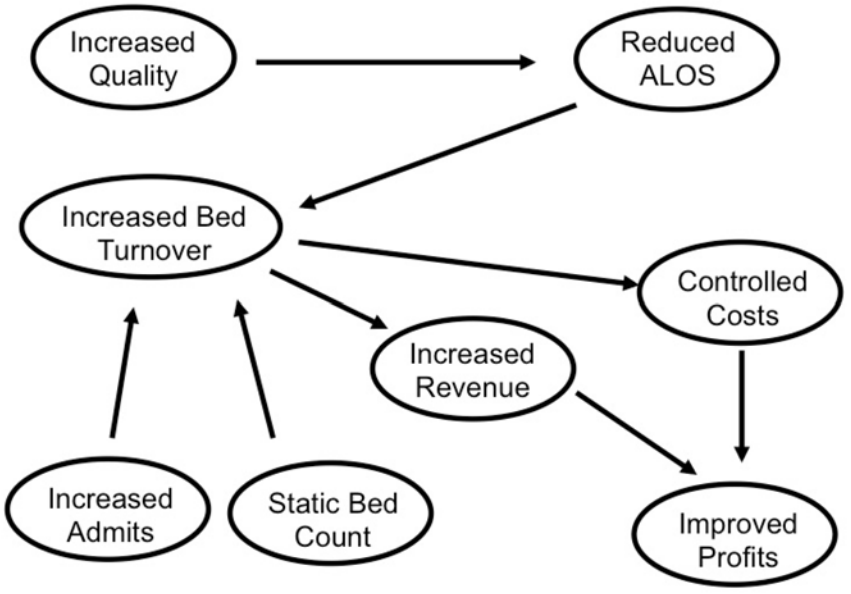

Figure 15.2
The path from increased quality to improved profits.

bed count remains constant. (If beds are taken out of service, the turnover rate will be affected, but the ultimate financial improvement will not be reduced.) The increase in bed turnover results in more revenue. Costs are controlled and not allowed to grow at the same rate as the revenue. This is not difficult since costs are largely fixed. With revenue growing and costs not growing as rapidly, the bottom-line profit of the organization is improved.

Several additional benefits accrue to quality improvement initiatives. These include cost efficiency and cost reduction, some balance sheet enhancements, and a series of intangible benefits.

- Cost efficiency is the first and easiest improvement to identify. Capacity increases because patients are moving faster through the care process. Work output can increase with little or no increase in cost. The result is lower cost per unit of service. The calculation is as follows:

  Same Cost ÷ Increased Work Output = Reduced Cost per Unit of Work

  Assuming cost of $5,000,000 and 500 cases, the calculation is:

  $5,000,000 ÷ 500 cases = $10,000 per case

  If volume increases by 10% to 550 cases, the cost per case drops:

  $5,000,000 ÷ 550 cases = $ 9,091 per case. This represents a 9% reduction in cost per case.

- Cost reduction is also possible but more difficult to achieve. Again, capacity increases because patients are moving faster through the care process. Work output does not increase, however, because the emptied beds are not being backfilled, and staffing can be reduced to deal with lower volume. The formula is:

  Workload Reduction ÷ Original Workload = Potential Staff Reduction

  Assuming a nursing unit's census drops more or less permanently from 20 to 16, the potential staff reduction would be 20% (4 ÷ 20 = 20%). Caution should be exercised in reducing staff cost because such reductions can result in dysfunctionality.

- Balance sheet enhancements are also possible. While these will take a backseat to the improvements in revenue and cost, they are nonetheless available and should be included in any narrative about quality-associated improvements. Because added revenue increases an organization's cash balance, added funds are made available for equipment purchases and investments in new programs. Patient service capacity, normally an expensive outlay, is provided free of charge. The added revenue and cash improve the organization's borrowing capacity.

- While it is impossible to put a monetary value on intangible benefits, by their very nature, they have value to the organization and should be included in any discussion of quality initiatives. These include reduced malpractice claims; better reputation and market share; and higher patient, family, and staff satisfaction rates.

MAKING THE PITCH

Once an initiative has been fully developed and the clinical, financial, and other benefits have been identified, it is time to put together the "sales pitch" to executive row. Again, the best approach is described by Stephen Denning in *The Leader's Guide to Radical Management: Reinventing the Workplace for the 21st Century*.[7] He advises making the case by telling stories. In this case, the story is about patients and others and how they benefit from the quality initiative. Put faces on the story. When describing a proposed investment in preadmission MRSA screening program, do not discuss the average patient. Instead, personalize the story. Speak about grandma avoiding a hospital infection. Decisions are best made when based on hard data, but the soft side, the human dimension, helps guide decisions. It makes decision makers want to find a way to make things work out.

Illustrate the story with organization-specific, anonymous patient data. The national literature can be cited to support an initiative, but local data always play better. When presenting the data, start at the end—the big payoff for the organization. Talk about return on investment. Use that to put in the hook and get the attention of the decision maker. Then, talk about the benefits: the impact on revenue and cost and the intangibles. Then and only then should the discussion turn to the necessary investment.

All quality and patient safety initiatives pay off financially. The challenge is in finding all of the benefits and assigning dollar values. If the numbers do not "work," the numbers are either miscalculated or not sufficiently comprehensive. Have all the strands on the spider web been checked? Ask all the other departments in the organization to list the impacts the initiative will have. Assign monetary values to those impacts and make sure they are included in the proposal.

AVOIDING THE MINEFIELD

Often, organizations use fully loaded cost to review the financials associated with a quality initiative. This practice can lead to a bad decision. As

described in Chapter 3, fully loaded cost uses the application of overhead to arrive at a more "sophisticated" financial picture of an opportunity. The problem with this approach is that the use of allocated overhead to a quality initiative, for example, overstates the real cost implications for the organization. If the discussion moves in this direction, the best strategy may be to accept the overhead allocation, but also request credit for the overhead no longer assigned to other elements in the organization. Since overhead allocation is a zero sum game, adding it in one place reduces it in another.

A second error involves the use of average revenue and cost data. Decisions should always be made on the basis of marginal values: marginal revenue, marginal cost, and marginal profits or losses. The following scenario illustrates this issue.

A hospital conducts 500 hip replacements per year with average reimbursement of $10,000 per case. The average direct costs are $11,500, which includes the $4,500 cost of the implantable and other case-specific supplies—the true variable costs of the hip replacement. The quality improvement team examined a variety of factors to improve patient care and identified process improvements that will reduce length of stay and allow the hospital to perform an additional 50 hip replacements per year.

This opportunity can be examined two ways. Table 15.2 shows the revenue, cost, and profit data using average logic and marginal logic. One approach will lead to the wrong conclusion.

Using average cost logic as shown on the left causes the expense level to be overstated. This is because that approach uses the entire $11,500 of average cost to determine the profitability. However, in adding the 50

Table 15.2
Hip Procedure Profit and (Loss) Data

	Average Logic	Marginal Logic
Hip replacements	50	50
Net revenue per hip procedure	$10,000	$10,000
Marginal revenue for hip procedures	$500,000	$500,000
Cost per hip procedure	$11,500	$4,500
Direct cost for hip procedures	$575,000	$225,000
Profit or (loss) for added hips	$(75,000)	$275,000

procedures, only the cost of the implant and the procedure-associated supplies will increase. The other costs are fixed and will not increase. Relying on the average cost logic will result in a bad decision and a missed opportunity. The approach using marginal cost logic shown on the right includes only the variable or marginal cost of the 50 procedures—$4,500. This is an accurate depiction of what will happen if the cases are added. For each new case, only $4,500 of cost will be incurred. Relying on this approach, the organization will make a wise decision.

Again, if the discussion drifts in this direction, politely remind those attending the meeting that their view of the average cost of the initiative includes fixed costs, which will not be incurred as part of the initiative being considered.

POINTS TO KEEP IN MIND

Improving quality and patient flow can have a substantial positive effect on bottom-line results. An important caveat is that to realize the potential for higher revenue, there must be the ability to backfill the newly found capacity with appropriate candidates for admission. One of the best ways to ensure patient demand is to offer higher-quality outcomes. Hospitals must educate and encourage their finance and clinical leaders to develop a shared understanding of the business case for clinical quality improvement. Clinical leaders must invite staff from finance to spend time on the patient units seeing what happens, learning how patient care is delivered. If the CFO, for example, has no understanding of how patient care is provided, how can he or she possibly make appropriate business decisions? It falls to the clinical leadership to educate the CFOs. Finally, it is important that clinicians and the finance team work collaboratively to improve both the quality of patient care and the financial condition of the hospital. In fact, it is impossible to improve either without collaboration and cooperation.

NOTES

1. Marshall Allen, "How Many Die from Medical Mistakes in U.S. Hospitals?" *ProPublica*, September 19, 2013.
2. "FastStats," Centers for Disease Control and Prevention, http://www.cdc.gov/nchs/fastats/homicide.htm.
3. Ibid.
4. "Healthcare-Associated Infections (HAIs)," Centers for Disease Control and Prevention, http://www.cdc.gov/HAI/surveillance/.

5. Steven J. Spear, "Fixing Health Care from the Inside, Today," *Harvard Business Review*, September 2005.
6. Nicholas Graves et al., "Estimating the Cost of Health Care-Associated Infections: Mind Your p's and q's," *Healthcare Epidemiology*, CID 2010: 50, April 2010.
7. Stephen Denning, *The Leader's Guide to Radical Management: Reinventing the Workplace for the 21st Century*, Jossey-Bass, a Wiley Imprint, San Francisco, 2010.

Chapter 16

NOW WHAT DO I DO?

Today, health care managers are facing difficult challenges. Hospitals, nursing homes, physician practices, and other provider organizations are striving to survive in an environment that is constantly and rapidly changing. A new set of challenges seems to develop each day. Each change in reimbursement, each new regulation, and each staff shortage bring a common question, "now what do I do?"

KNOWLEDGE OF THE BUSINESS

A manager must understand the workings of the prevailing reimbursement methodologies and the requirements of applicable regulations, the quality and quantity of resources that the prevailing reimbursement methodology makes available (resource supply), the quantity and quality of resources needed (resource demand), and how to balance resource demand and supply (resource maximization). In addition, a manager must be able to manage his or her budget and comply with operational constraints.

The complex web of rules and regulations governing reimbursement is difficult to understand in complete detail. It is possible, however, to achieve a working familiarity that can be used to guide day-to-day activities. For example, the regulations governing the operation of accountable care organizations (ACOs) are complex and lengthy. However, day-to-day operations may require only that a manager understand and be guided by a few simple principles. A manager should never be afraid of asking for advice from the experts inside the organization who are more familiar with certain aspects of the regulatory environment.

Managers must also understand the basis used to include or exclude various cost elements in the calculation of the reimbursement for their service. How many minutes of radiology technician time were included in

the price structure for a CT scan of the brain? What level of compensation was included? How much supply consumption was provided for? On a broader scale, managers must look at what resources were included in per case reimbursement rates. For a particular type of case, how many days of inpatient care were envisioned? What mix and intensity of ancillary usage were included? What level of acuity? What was envisioned in the reimbursement rates per covered life?

In departments that do not directly produce revenue, managers must examine and understand what elements were included in the department expense budget (in a sense this is their "revenue") and what level of work output was expected. This information represents resource availability. In many respects, it is analogous to "supply" in the supply-and-demand equation.

As a next step, managers must understand what the customary way of operating includes. How many technician hours are budgeted? What level of compensation is paid? How many dollars of supplies are consumed? By comparing reimbursement (supply) with resource needs (demand), managers can determine if and where resource shortages exist as well as the order of magnitude of any shortages.

PLANNING AND VIGILANCE

Both operational planning (the annual operating budget) and strategic planning (three- to five-year business planning) must be employed to develop and implement courses of action to support successful activities, remedy poor performance, or reposition for the future. To be successful, managers must constantly strive to improve performance—essentially, to do more with less. This means that on a daily basis, managers will be taking action to achieve improvement by doing the following:

- Changing spending habits. Often, supplies are consumed out of force of habit, without a lot of thought. Such habitual behavior needs to be replaced by more appropriate cost-conscious behavior.
- Changing the demand for services through user education, the establishment or revision of ordering criteria, and other techniques to reduce resource consumption.
- Substituting less expensive items. Managers must examine the potential to save by using less resource-intense technologies, lower-cost supplies, and more cost-effective staffing patterns. The emphasis should be on achieving the desired results using the least costly resources.

- Examining staff composition to determine that only the absolutely necessary types and numbers of staff are present. In addition, managers must be creative with recruitment, retention, and cost-effective work schedules.
- Spending money to make money. While the emphasis naturally should be placed on cost and resource use, spending money to make money has long been a prudent approach. If employing higher-skilled and higher-paid staff costs 15% more but generates 25% more revenue, a manager would be foolish not to consider this opportunity.
- Reviewing procedures and practices to identify realistic alternatives that use resources more effectively. Such alternatives must be workable and acceptable; otherwise, they will fail, and the resources used to identify and implement them will have been wasted.
- Searching for productivity gains throughout the organization. Since labor costs represent the largest single resource expenditure, methods that increase appropriate, value-added work output must be carefully studied.
- Critically reviewing current practices to determine what things might be eliminated. Here, the concentration is on "need to have" rather than "nice to have." Managers would be well advised to routinely categorize all of their resources into three categories: "A" items (those that are absolutely essential and without which the department or service cannot function), "B" items (those that are necessary but which the department or service can somehow function without, at least for the short run), and "C" items (those that are useful but not absolutely necessary). In this way, managers can always be prepared to make reasonable cuts. This approach is borrowed from journalists who are taught to place the most important material of a story in the lead paragraph and then reduce the importance of information contained in each succeeding paragraph. If done right, an editor can reduce the size of a story without reading it merely by cutting it from the bottom. If properly written, nothing of importance will be omitted from the edited version.

With the reimbursement environment changing as it does, even successful processes, procedures, and approaches must be changed from time to time to assure the continued success of an organization. Change is also involved in actions designed to remedy or reposition. Change often involves risk and often places a strain on the organization. Many times, it is resisted. Consequently, change must be carefully planned if it is to be successful. Do not cut corners with the implementation. Failure is often the result of poor implementation.

A BUSINESSLIKE APPROACH

While it is true that a health care facility cannot be compared to a manufacturing plant, there are many techniques that have been used successfully in other industries that have application in health care. It is possible for health care managers to adopt a businesslike approach while retaining the necessary human qualities. Some business techniques that have application in health care include capital infusion, subsidization, opportunism, and innovation.

Capital infusion. Equipment can be used to perform tasks more quickly, more accurately, and less expensively. Equipment can be used to increase labor productivity, thus permitting a growth in volume without a corresponding growth in labor costs. A reduction of labor costs may also be possible. Care must be exercised, however, because in some cases capital infusion can lead to increased labor costs.

A computerized appointment scheduling system at a physical therapy provider may increase productivity by eliminating unfilled appointment slots during which there may be no productivity. Further, such a system may speed patient flow through the inpatient units so that length of stay is reduced, resulting in a less costly and more competitive or more profitable case.

The addition of equipment may support a "make versus buy" decision. Certain procedure kits purchased from the outside may contain more supplies than needed and thus cost more than a kit manufactured in-house. Perhaps the addition of some staff and sterilization equipment would allow in-house manufacturing of such kits, thus realizing cost savings.

Some equipment reduces labor and supply costs. If the equipment is not too costly, the savings may be significant enough to justify acquiring the equipment. New or expanded equipment may allow the addition of new, more profitable, or less expensive business. It may allow economies of scale. Be wary, however, of expensive new equipment. Sometimes the appeal of fancy bells and whistles can lead to the acquisition of equipment that actually reduces productivity. A fancy new documentation system that requires difficult and time-consuming manual input may actually reduce productivity, volume, and revenue. High-tech equipment can be particularly attractive but occasionally unnecessary. The organization's scarce resources might be better spent some other way.

Subsidization. Financial support can be given to a losing entity from a profitable one. One department that loses money may be supported, or subsidized, by a department that runs a profit. Consider the case of a

Table 16.1
Cross-Departmental Subsidization

	Behavioral Health Outreach Program	Acute Inpatient Behavioral Unit
Total revenue	$8,350,000	17,960,000
Total expense	9,236,700	14,986,400
Profit of (loss)	$(886,700)	$2,973,600
Subsidy	1,000,000	(1,000,000)
Profit or (loss) after subsidy	$113,300	$1,973,600

psychiatric outreach program that loses money but acts as a feeder to an acute inpatient psychiatric unit that makes a profit. If viewed in isolation, the outreach program might be abandoned. A subsidy from the profits of the acute psychiatric unit changes the picture (Table 16.1).

A similar mind-set could consider a subsidization of the outreach unit as a way of avoiding unnecessary, and potentially unpaid, emergency department visits or inpatient stays.

A common practice in business is to recognize that certain products or even entire product lines are "loss leaders" that do not make a profit but contribute to the profitability of the rest of the business. In consumer electronics, for example, companies lose money on small parts, but they must offer these loss leaders if they are to be viewed as full service and make substantial profits from high-end hardware.

Opportunism. This involves quickly taking advantage of opportunities as they develop. Opportunism requires an orientation to rapid analysis and decision making. To be opportunistic, managers must be observant, energetic, and, most of all, not afraid to make a decision. The ability of the organization to be quick and nimble in a developing marketplace is key to success. Just as in baseball, the best base stealer is not the fastest runner, but the quickest to seize the opportunity to steal a base, for health care organizations, the ability to recognize an opportunity before anyone else does and move to take advantage of that opportunity is key.

Innovation. This is required for the development of new and improved methods and practices. Especially in a rapidly changing reimbursement environment, innovation can be the difference between leading the pack and being lost in the dust. Be careful to avoid trendy notions and fads that are not true innovations. Borrowing ideas from other industries can

also come under the banner of being innovative—at least as they apply to health care.

While it is appropriate to adopt a businesslike approach, this should not be confused with a ruthless win-at-all-costs approach. Health care involves people, both patients and workers, and the decisions made in managing the delivery of health care must be balanced by human needs.

THE DESIRE TO MANAGE

Success hinges on the desire to manage—wanting to be on the front line making things happen. Lacking this key characteristic, managers fail. The role of the manager is often associated with action words: planning, organizing, staffing, directing or leading, controlling, and so on. Acting involves a certain amount of risk; mistakes can be made, even by the best and most experienced of managers. To be successful as a manager requires an orientation to action, to make things happen, and to be willing to take risks in order to achieve objectives. Lacking this orientation, it is impossible for someone to be a successful manager.

In finance, the conventional wisdom is that risk and reward balance each other. The greater the reward, the greater the risk. The more secure or safe an investment is, the lower its rate of return. Conversely, investments offering a higher-than-usual return typically involve higher-than-usual risk. This is true in management as well. To achieve a reward, a manager must take a risk. To achieve a substantial reward, a manager must take a substantial risk.

The worst managers, those who are the least successful, are those who are so afraid of making a mistake that they will risk nothing. They will avoid acting. As a result, they cannot be opportunistic or innovative because taking advantage of an opportunity or being an innovator means taking a risk and perhaps making a mistake.

A good manager is an advocate, too, and this can cause problems for some managers who have difficulty striking a balance between supporting one position (the advocate's role) and supporting a different position once a decision has been made (the manager's role). It can be difficult for some managers, particularly new ones, to understand that the two roles are able to coexist. How is it possible for a manager to argue in favor of new lab instruments during the capital budget process only to turn around after the budget has been approved, without the instruments, and support and defend that decision? The answer rests in the fact that no manager is asked to play both roles at the same time. The advocacy role comes first as

part of the decision-making process, while the manager role comes later on during the implementation process.

When being an advocate for anything, understand the constraints in the environment and be realistic with requests. Do not argue for what cannot be achieved. Advocate for the "cause," but understand when to back off. If challenged strongly by the decision makers ("obviously, you don't understand!"), fall back to fulfilling the manager's responsibility to communicate. Remember the advice from Roman senator Tacitus, "He that fights and runs away may turn and fight another day."[1] Do not be afraid to lose the battle so that later you can win the war.

OBSTACLES TO SUCCESS

Despite the presence of all the ingredients for success, obstacles can stand in the way. Success depends on a manager's ability to overcome the obstacles while continuing to work toward stated goals and objectives. Among these obstacles to success, most common are a lack of input to the planning process (e.g., a top-down operating budget "given" to a manager), a lack of information (flying blind in effect), an overabundance of problems (usually because of poor management in the past), and the need to bring about change.

Not being involved in the planning process can place a manager in the position of being expected to deliver the impossible. The plant manager who is not consulted as the utilities budget is being prepared may not be able to reduce utility expenditures to the level inappropriately budgeted. This inability to "deliver" can lead to frustration, despair, and eventually the manager's resignation. On the other hand, if the manager had been consulted, the outcome might have been far better. He or she might have convinced those constructing the budget that a reduction in utility costs was impossible but that other actions in other areas could yield the same cost savings.

Another major obstacle to any manager is the lack of quality management information. A good manager must always be reviewing how his or her department or section is operating, using a yardstick of some sort. This constant vigilance must be supported by a management information system that provides timely, accurate, and usable information (not to be confused with data). Managers who lack this kind of information support will be forced to manage by the seat of their pants, a style not highly recommended for today's health care managers.

From time to time, a manager will be thrust into a situation in which there are too many problems with which to deal. In many cases, the situation is

inherited from a previous manager. Often, the situation involves a lack of prior management control and/or false expectations on the part of upper management. This could have been precipitated by sudden and dramatic increases in cost, unanticipated volume changes, and so on. In this situation, a manager must take precautions not to despair. No manager can handle 20 or 30 "problems" at a single time. Prioritize them and concentrate on the top three to five problems. Then, after these are resolved, move on to the next three, and so on. This deliberate approach to the problems, never losing sight of the light at the end of the tunnel, is the only approach that will lead to success. Setting an agenda for improvement and always moving forward, even with little steps, will eventually build momentum for success. The key is to persevere.

Managers must be able to bring about change in response to changes in the health care delivery environment. Managing change may be the most difficult task a manager will ever face because change, in and of itself, is a most difficult task. People, the instruments of change, are often reluctant to change ("we've always done it this way"; "this is how Mrs. Norwich always liked it to be done") and in some cases resist change quite strenuously. If management backs away from the necessary change, it is perceived as a victory for the status quo. The next time a change is to be introduced, even more difficulty will be encountered. Some managers are particularly adept at bringing about change, while others flounder.

For this latter group, assistance from the outside may be available. Circumstances are often such that a solution to a problem cannot be found in a single department. Effort may be required beyond a given manager's level in the organization or outside the manager's scope of responsibility. Such circumstances require accurate, timely communications both with peer-level managers and up through the organization structure. Refrain from telling the next layer of management what it wants to hear; rather, tactfully and collegially tell it what it needs to hear. Not being able to tell the boss what the boss needs to hear is a sign that a manager may want to look elsewhere for employment. An organization that stifles the upward flow of accurate, but unpleasant information is on the path to failure.

SUGGESTIONS FOR SUCCESS

While there is a recipe for successful management, there is no guarantee. All that is certain is that managers throughout the health care delivery system will be challenged as never before. The response to those challenges depends on the exact circumstances, the resources available, the ability of

the manager, and so on. It is impossible to provide a troubleshooting list with problems and recommended solutions. At the same time, it is possible to offer a number of generic suggestions for consideration from time to time. As reimbursement changes from fee for service to case-based payments, capitation based on enrolled lives, and global budgets (Maryland unveiled its first-in-the-nation global budget revenue [GBR] system in late 2014), the management orientation must change as well. Understand what the organization is paid to do and not to do and manage accordingly.

Managers must constantly remind themselves that their actions are not isolated to their own departments. Consider the laundry department manager who saves money for his or her department by reducing the temperature of the wash water, the amount of chemicals used to process the linens, and the temperature of the ironers. The result is a decrease in the laundry department's utility and supply costs. The resulting increase in the infection rate on the inpatient units because the linen is not as clean as before produces a spike in laboratory and drug usage that may never be connected with the laundry manager's actions.

Place emphasis on efficiency and effectiveness, not just productivity. Productivity is important and necessary, but it must be balanced against reimbursement. A laboratory capable of producing 23 different test results for patient Johnson may be more productive than a laboratory capable of producing only 16 tests with the same amount of resources; but if the reimbursing party will pay for only 15 tests, which lab is more efficient and effective?

Consideration should be given to alternative sites and methods for delivering care. Outpatient care, home care, and similar initiatives can reduce high-cost hospitalizations. In a GBR environment or an ACO model in which reimbursement is based on enrolled lives, such shifts will have an impact on revenue, expense, and profits. For example, in a GBR system, substituting outpatient and home care for high-cost hospitalizations can allow for a reduction in operating cost while not affecting the GBR. Innovation is the key in this regard.

Alternative scheduling should be considered as a way to offer convenience to patients. When are most hospital clinics open? During the day, Monday through Friday. When are most patients who have good insurance coverage, or the ability to pay out of pocket, most inconvenienced? During the day, Monday through Friday. When are most patients who have good insurance coverage, or the ability to pay out of pocket, least inconvenienced? Evenings and weekends. When should hospital clinics offer hours? Evenings and weekends.

Discharge planning has become a routine at many institutions. But how many institutions are practicing "admissions planning"? As discussed in Chapter 12, this seeks to manipulate elective admissions in order to cut down on the widely different peaks and valleys of the inpatient census. In turn, this allows staffing to be adjusted to a range of activity that has less variation around the average.

In response to reimbursement pressures, consideration must be given to peer-reviewed treatment protocols or pathways that would suggest the tests and procedures be performed on each day of a particular stay depending on the admitting diagnosis. While some may call it "cookbook medicine," the use of protocols can allow providers to better negotiate prices, avoid malpractice claims, plan census activity more accurately, and better forecast volume and financial results.

The medical record tells payers what happened to the patient for whom they are expected to pay. If a medical records clerk miscodes a surgical procedure or a diagnosis, reimbursement could be adversely effected. Periodic audits are key to coding accuracy.

Industrial engineering techniques such as time-and-motion studies, lean six-sigma, and the Toyota Production System should be used to eliminate waste, duplication, and unnecessary consumption. Industrial engineers bring sophisticated, quantitative methods and an engineer's mind-set to the task at hand. They are prepared by training and experience to improve process and "throughput." Their techniques, modified to account for the human element, can lead to improvement in health care as well. Some providers are already employing the skills of management engineers (the title "industrial engineer" does not seem to be well received in health care) to achieve better operating results. In manufacturing, department heads relish the idea of an industrial engineer spending some time in the department looking for ways to do the job better. In hospitals, on the other hand, department heads are often defensive, and the relationship can become adversarial ("why are *you* looking in *my* department?") rather than cooperative.

Another technique is the development of comparative cost analyses to determine where improvement can be made and how much improvement is possible. A comparative analysis of the laundry operation at the ABC Nursing Home might look something like Table 16.2.

This kind of analysis indicates that the laundry department in question might be capable, all other things being equal, of producing laundry at $0.36 per pound, a savings of $0.05 per pound if it were operated like Nursing Home YY. But this analysis goes a step further to make the

Table 16.2
Comparison of Laundry Processing Cost per Pound

Operating Cost Element	ABC Nursing Home	Nursing Home XX	Nursing Home YY	Nursing Home ZZ	Hypothetical Best
Labor	$0.21	$0.20	$0.18	$0.20	$0.18
Linen replacement	0.09	0.09	0.08	0.07	0.07
Chemicals	0.06	0.06	0.05	0.06	0.05
Other supplies	0.02	0.02	0.02	0.02	0.02
Utilities	0.03	0.03	0.03	0.03	0.03
Total	$0.41	$0.39	$0.36	$0.38	$0.35

comparison to a hypothetical best nursing home and its cost of $0.35 per pound. The analysis is detailed by cost element, pointing to three areas (labor, linen replacement, and chemicals) for potential cost reduction.

While significant funds are devoted to clinical research, very little is devoted to operational research. How many large providers like hospitals have ever built a research center or configured an operating unit in such a way that reconfiguring workflow could easily be modeled? Linked with industrial or management engineering, industrial cost accounting methods, which are different from the cost accounting methods employed by most health care providers, can establish standard cost profiles for many day-today activities. Application of the standard cost technique to medical/surgical supplies would result in the consuming departments being charged for supplies on the basis of a standard price per item. Any deviation from this price would be accounted for separately and the materials management department would be required to explain the differences. Using this approach, unit and department managers could concentrate their efforts on supply usage rather than price. The purchasing department would be responsible for the price deviation. Responsibility would therefore be fixed at the control point—in the departments for usage and in purchasing for price. In manufacturing, for instance, this is the accepted practice for establishing accountability and management responsibility. It removes uncontrollable items from a manager's responsibility.

In hospitals and other health care organizations, the focus of cost accounting has historically been on the past—what *did* something cost? In manufacturing, the concentration has been on the future—what *will*

something cost? Standards exist for virtually everything in the manufacturing process. There are almost no such standards in a health care organization. In a manufacturing plant, variances from budgets or standards are scrupulously monitored, tracked down, and controlled. How many hospital department managers routinely determine their labor rate variance? How many even know how to make the calculation? How many have ever calculated a labor efficiency variance? A materials usage variance? How many hospital directors of materials management have ever calculated a purchase price variance on the medical supplies they acquire for use throughout the hospital? If scarce and expensive resources require these calculations in manufacturing, should not resource scarcity and cost require the same in hospitals and other health care organizations? Is this not a method of stretching resources to benefit more patients by wasting less? Does that not translate into better health care?

Sophisticated financial analysis tools are available to improve decision making and management control. Benefit/cost ratio analysis, breakeven analysis, payback period calculations, and the like can be used to select the best alternative from among several options. Variance analysis can be used to determine if a hidden problem exists and can help in selecting the appropriate course of action. Regression analysis can be employed to develop trends and forecast future direction.

Information systems and automation can pay enormous dividends in health care, but not just for billing and lab results reporting systems. Automation is more than robots scurrying around delivering patient meals and medications.

Information systems refer to separate, but fully integrated, systems to support financial, operational, and clinical management by tracking

- work processes and performance,
- clinical performance (both outcome and process) against established quality norms, best practices, and reimbursement, and
- physician performance (admissions rate, length of stay, mortality indexes, patient progress on predetermined treatment protocols, resource use rates, OR posting accuracy, etc.).

Such tracking can help determine areas of potential performance improvement. Comparisons can be made to national best practice data, to other organizations in a collaborative initiative, to benchmark data, and so on.

Management information systems need to be enhanced to provide real-time information management of the emergency department, the imaging department, the patient transporters, and the like. Epidemiologic data in the service area population can help providers know what programs are needed and which patients should be better managed so as to avoid high-cost interventions. Information systems should integrate clinical, financial, and operational information to support improved day-to-day operations, better management decision making, and strategic management. These systems could function like a health care version of the air force's AWACS radar planes, which blanket the battle space with information about both enemy forces and friendlies. In health care, all providers would have access to all data and could use it to provide better, more cost-effective care. Computerized master scheduling could tie together treatment protocols, exams room schedules, available therapy time slots, and diagnostic schedules to improve efficiency and effectiveness in the delivery of care.

Automation is essential to resolve chronic labor shortages, not only skilled professionals but unskilled workers as well. Automation in health care means infusing machinery and technology to produce work with far less human effort and eliminate human error. Automated pharmacy computers are already used to prepare unit doses. Robots can deliver medication carts to nursing units. Automated room-cleaning robots working with environmental services techs can clean patient rooms using UV-C light or a sterilizing mist far better than an environmental tech can alone. Voice recognition dictation systems can generate medical documentation directly from the provider's spoken word without the need for transcriptionists or time-consuming manual data entry. This can reduce or stretch the labor force and make information available more quickly. Voice-driven scheduling systems can take a simple physician order, "Upper GI series for Mr. Johnson," and with no further human intervention, convert it to an appointment in imaging the following morning. Then the system can schedule the patient transporter to take Mr. Johnson to imaging and return him when the procedure is completed, issue an NPO (nothing by mouth) order for a specified number of hours before the procedure, cancel breakfast and schedule a makeup meal for later in the day, and so on. Robots linked with computers may eventually move patients from one location to another. The limit on such advances rests solely with the ability to imagine what could be. Robert Kennedy's famous presidential campaign line from 1968, "Some men see things as they are and ask 'why?' I see things that never were and ask 'why not?' " applies here.[2]

CHANGING MANAGEMENT FOCUS

While managers are primarily concerned about the hard side of performance (budget compliance, achieving objectives, improving quality, etc.), the focus must broaden to encompass more than just the department performance. Since all departments are connected on the organizational spider web, managers should look to these other connected departments. Figure 16.1 illustrates this notion in abbreviated form.

For example, the pharmacy director will typically look at drug pricing in the pharmacy and not beyond. But this is a shortsighted view of management. What about the cost of administering the medications on the nursing units? What about the ordering habits of physicians? These supply and demand issues must also be addressed. Thus, the pharmacy director must work with those being served to deliver the medications in the most cost-effective manner for the entire institution, not just the pharmacy. This must take into account the cost to nursing. Table 16.3 displays the sort of side-by-side comparison the director must use to decide which form of a medication to purchase. Looking solely at the cost to the pharmacy, the IV medication is far less expensive than the oral one and over the course of a year the spend will be nearly $100,000 less.

On the supply side of the service equation, the IV medication has far more nursing unit cost associated with its use. If the director looks beyond the pharmacy, this fact will be recognized and can be taken into account

Pharmacy Operations

Supply Side	Department	Demand Side
Oral administration of medications versus IV administration	Best possible value for medications used in the hospital	Clinical Pharmacists interacting with physicians to modify drug usage

Laundry Operations

Supply Side	Department	Demand Side
Supply methods tied to user needs (bulk carts, nurse servers, etc.)	Best pricing for textile items and lowest cost of laundering	Active Linen Committee dealing creatively with linen usage

Figure 16.1
Managers must look at both the supply of services and the demand for services in addition to managing the department.

Table 16.3
Pharmaceutical Cost Comparison

Description	IV Medication	Oral Medication
Drug cost per dose	$1.80	$11.50
Administration cost per dose	15.00	4.00
Nurse intervention per dose	26.00	13.00
Total cost per dose	$42.80	$28.50
Annual doses	7,500	7,500
Annual medication cost	$321,000	$213,750

when stocking medications and supplying them to nursing units. On the demand side, clinical pharmacists could be assigned to work with attending physicians on nursing units to influence prescribing habits. A clinical pharmacist could meet with physician whose use of a certain antibiotic normally results in a later prescription for an antiemetic and a different antibiotic. Their conversation may result in a change to the prescribing habits and a reduction in medication spending for the organization.

While each of these suggestions can be employed individually, a blending of the various strategies can have a synergistic approach. Combining industrial engineering and automation can do more to improve overall performance than either one alone. In some cases, the listed suggestions need to be combined with some specific management qualities.

Inspiration, not perspiration, will get more from workers. Managers who are able to inspire their workers will generally achieve greater results. Managers who provide a supportive environment will as well. When workers can share unpleasant, but nonetheless essential information with management, blind spots disappear, surprises are avoided, and clear lines of communication develop. In short, the spider web works better.

Perhaps the best advice to managers is to be far-sighted. Think strategically. This allows managers to avoid problems as opposed to trying to fix them. It has been said that two of baseball's greatest stars, Joe Di Maggio and Cal Ripken, Jr., seldom made spectacular catches. It was not because they were not great fielders but rather because each of them was able to think strategically in a way—to position themselves where the ball was likely to go and be prepared to make a routine play as opposed to being out of position and needing to make a spectacular play to record the out.

Finally, incentives and rewards for managers can have a place in improving operations. A management bonus may have the most effect but may not be politically possible because of the nature of business. There remain, however, other forms of incentives that can be just as effective. Make it easier for managers who "deliver" to compete for scarce resources—maybe a bigger share of the capital equipment budget, a slightly larger expense budget, or a lower cost reduction target, and so on. Public recognition of positive performance—recognition in front of peers—goes a long way.

Managers are not the only ones who respond favorably to positive noncash incentives and rewards. Staff should also be recognized for exceptional performance. Too often, this recognition happens behind a closed door during a performance review meeting. But even something as simple as a handwritten note sent to a person's home thanking him or her for exceptional performance could have a positive impact.

NOTES

1. http://www.brainyquote.com/quotes/authors/t/tacitus.html.
2. Robert Kennedy (n.d.). BrainyQuote.com. http://www.brainyquote.com/quotes/authors/r/robert_kennedy.html.

Chapter 17

SOME FINAL THOUGHTS

Although better known for his chronicling of the adventures of Tom Sawyer and Huckleberry Finn, Samuel Clemens, better known as Mark Twain, offered sound advice on predicting the future: "The art of prophecy is very difficult, especially with respect to the future."[1] But those who do not look to the future are inviting disaster. Who would drive a car looking out the rear window instead of the windshield? In health care, it has sometimes been said that predicting what the government, politicians, payers, and others might do is impossible. But there are signs and indications. History can help inform because the same approaches seem to be recycled frequently. The Patient Protection and Affordable Care Act of 2010 ushered in the ACO (Accountable Care Organizations) mentality, which is very similar to the HMO (Health Maintenance Organizations) mentality of the 1980s. The increase in the use of insurance to (unsuccessfully) reduce the high cost of health care has been followed by more insurance to (again, unsuccessfully) reduce the cost of health care. Although there is no proof that he actually said it, the often-quoted Einstein definition of insanity comes to mind: doing the same thing over and over again and expecting different [better] results.

To position their health care organizations properly, leaders and managers must look to the future to avoid problems and take advantage of emerging opportunities. Health care has already seen and will likely see even more scrutiny, decreased reimbursement rates, increased regulation, and a greater government role in day-to-day operations, including more audits. As a result, providers have experienced slowed revenue growth and shrinking profit margins while facing a need to make costly investments in information technology, electronic medical records, the conversion to ICD-10, and organizational changes to accommodate the emphasis on population health. Hospitals, in particular, have seen declining inpatient

volume as care shifts to less expensive outpatient settings and efforts to prevent "avoidable" utilization.

How many more challenges will have to be faced? Given the high cost of care, one must ask if an unprecedented financing crisis lies not too far ahead. If provider profits continue to decline, what will become of the health care delivery system? One possibility is that a national financing crisis will result in a breakdown of the delivery system. In turn, this is likely to lead to federal intervention and the imposition of a single-payer insurance program (Medicare for all?) and perhaps even a single, national provider system like the Veterans Administration.

THE CHALLENGE FOR LEADERS AND MANAGERS

To avoid these potential problems and take advantage of emerging opportunities, leaders and managers must work together—not an easy task given the reality that health care is comprised of predominantly small local organizations, unlike the airlines and automakers. The assignment includes informing and educating the public, advocating for patients and services, creating a shared vision of the ideal health care delivery system, shaping the debate, and providing the missing ingredient (leadership) for a successful delivery system.

Informing and educating the public. The public relies on two primary sources for information about health care: the press and politicians. The press does not understand the issues. Instead of finding out and reporting on how the system works, the concentration seems to be one of highlighting problems and promoting its own agenda for the system. Little has been written about how providers are challenged to deal with such issues as "avoidable" utilization. But what exactly is avoidable and who defines it? Payers do not want to pay for it, but they have not proactively defined it. How are patients affected by initiatives to reduce it? How will their access to health care be affected by the changes to the system? What exactly is population health and how does it potentially change the patient–provider relationship? More informative and objective reporting is needed.

Politicians and the press have been successful in convincing the public that health care has become disproportionately and inappropriately expensive. It is expensive, but given what is done and how it is done, one could argue it is worth the price. The drumbeat continues to be about cost but is silent on important aspects of care like value and responsiveness. It is possible to reduce the cost of CT, MRI, and PET scanning procedures by limiting their availability via health planning techniques like Certificate

of Need regulations, but the public is not likely to appreciate it. Someone needs to explain that the cost of health care is increased by the desire to have higher-educated providers (e.g., physical therapists with doctoral degrees), sparkling new facilities, and rapid availability of tests and procedures. The use of high-cost emergency department care for non-emergent conditions illustrates the public's desire for instant gratification.

The press, and then the public, is outraged that a hospital charges $16 for a pain pill, while that same pill can be bought for 16¢ at a big box store. How can this be? The public is unaware that at the big box store there is far less regulation; little or no ambiance; and a lack of highly educated, highly skilled, and trained workers involved with that pill. The following vignette illustrates the situation.

At a hospital, a physician must write an order for the medication to be administered. That order must be transcribed by a unit clerk and then sent to the pharmacy where it is reviewed by a pharmacist for consistency with the patient's medical condition, known patient medication allergies, and potential medication contraindications (e.g., magnesium prevents the proper uptake of synthroid). Following this review, the order is passed to a pharmacy technician who enters it into the pharmacy information system and fills the order. The medication is then delivered to the floor where it is given to a nurse to give to the patient. The nurse documents the administration in the medication administration record, which is part of the patient's medical record. For sure, the cost of the pill is less than the 16¢ that the big box store charges, but the amount of hospital-specific cost increases the cost.

The amount of labor involved and the cost of that labor, given licensure, education, and regulatory considerations, add to the cost. Both the doctor and the nurse are licensed. The pharmacist has a doctoral degree. The various information systems used are expensive. The hospital is licensed and subject to random inspections by state health departments and The Joint Commission. Some of the staff may be unionized with pay rates that are not entirely controllable by the hospital. The cost of regulatory compliance adds cost as well. The hospital's bill to Medicare and other third-party payers is heavily discounted. Many of the patients cannot afford to pay (charity cases), while others refuse to pay (bad debts). When one patient does not pay, someone else must and this raises the cost of the pill.

None of this applies to the big box store. Is it any wonder the price is significantly higher? Patients are generally ignorant of the situation and make judgments about the financial ethics of the hospital without knowing the circumstances.

It falls to leaders and managers in health care to educate the public. Explain what patients can expect from health reform. Describe how their organizations will work to provide the best possible care in the most

economic and efficient settings. Explain what patients can do to improve their health and avoid costly interventions. Educate them about appropriate expectations and responsibilities. Show them how to navigate the labyrinthine billing system. Many years ago, the now defunct Syms Clothing chain used "an educated consumer is our best customer" as its motto. That motto should apply to health care as well. An educated patient is the best patient.

Advocating for patients and services. As more and more change happens, it is the responsibility of leaders and managers to be advocates for high-quality care provided in the most economic and efficient settings. Quality must be the number one strategic and operational goal. While this text describes how to make the business case for clinical quality and patient safety, there should be no need to make such a case. If any other industry killed 100,000 people each year, nobody would dare go near it. Health care is different. People can avoid certain brands of automobiles, certain restaurants, and so on, but it is difficult to avoid health care. It is no longer acceptable to claim to provide quality care as staff cuts are being made. The literature is rife with articles correlating nurse to patient ratios with improved care. In 2002, Jack Needleman and his colleagues published a breakthrough study in the *New England Journal of Medicine* that pointed out the folly of nursing staff reductions.[2] The study found significant differences in clinical performance between low-staffed and high-staffed hospitals, shown in Table 17.1.

The study showed that the amount of staffing had a direct effect on clinical performance. Whether looking at urinary tract infections (UTIs) or pneumonia, Needleman found worse outcomes in low-staffed hospitals.

Table 17.1
Nurse Staffing and Clinical Outcomes

Indicator	Low-Staffed Hospitals	High-Staffed Hospitals	Difference
ALOS, days	5.5	4.6	–16%
Urinary tract infection	6.20%	5.80%	–6%
Pneumonia	2.30%	2.00%	–13%
Upper gastrointestinal bleeding	1.10%	0.90%	–18%
Shock/cardiac	0.60%	0.50%	–17%
Failure (surgery)	22.60%	19.70%	–13%

Adapted from Needleman et al., "Nurse-Staffing Levels and the Quality of Care in Hospitals," *New England Journal of Medicine*, 2002.

Although his study focused on clinical outcomes, one of his findings had significance financially. Average length of stay (ALOS) was approximately one day less in high-staffed hospitals than in low-staffed hospitals. Although this decrease in ALOS is important clinically, it also suggests the ability to care for more patients. If patients can be released from the hospital in 4.6 days rather than 5.5 days, the hospital can accommodate more patients with the same number of beds. While Needleman's article was focused on the relationship of staffing to quality, it also demonstrated that cost-reduction tactics (e.g., reduction in staff to save money) can result in dysfunctionality that can impact quality of care and length of stay. The hospital actually provides worse care, cares for fewer patients, generates less revenue, and reduces the bottom line. Certainly waste must be eliminated, but blind adherence to cost-reduction strategies designed to improve bottom-line performance has a detrimental effect on the quality and safety of patient care.

Leaders and managers must provide the best and safest care humanly possible. This does not require large outlays of cash. Preventing ventilator-associated pneumonias, for example, does not require any investment at all, but rather compliance with five simple, no-cost guidelines. Remember that a focus on quality is not just for the leadership team. Everyone should be committed to it, and the culture of the organization must support it. Leaders can bring this about, encourage it, reward it, and mandate it.

The patient experience, too, must receive attention. Reputation, an essential in a competitive environment that health care is rapidly moving into, is often based on the public's perception. The care may be the best possible, but if the staff are not friendly, fail to introduce themselves, or seem too rushed to care, patients will judge the entire experience by their actions.

Creating a shared vision. Because health care is primarily a local venture, working collaboratively on a national issue like the American health care delivery system will be difficult. National groups like the American Hospital Association, the Healthcare Financial Management Association, the American College of Healthcare Executives, and the American College of Physicians will need to take the lead, but they must work with local chapters and health care executives to lead the charge. Because of America's cultural, population, and geographic diversity, one size will not fit all. Rather than design the details of the ideal system, these industry leaders should concentrate on a set of realistic and achievable goals and characteristics (the "what") and allow local systems to determine the best ways (the "how") to achieve those characteristics. The approach should

cut across all segments of health care (hospitals, physicians, long-term care facilities, pharmaceutical companies, etc.) and involve all of the critical players and stakeholders in the development effort.

When Ross Perot ran for president in 1992, he recommended using small trials of new programs at the state level. In this way, it would be possible to identify the positives and negatives of each and fix any problems before rolling them out for the entire nation. In addition, he pointed out that because of regional differences, approaches that work in New York and Maryland may not work in Oregon and New Mexico and vice versa. He recognized the diversity issue and suggested a way around it. The new, ideal health care system will need to respect these differences.

Shaping the debate. One of the best ways to develop the vision of the ideal system is to engage all parties in a national debate on a whole host of issues, including:

- the point at which low-birth-weight premature babies should receive no clinical intervention,
- the age over which patients should no longer be eligible for organ transplants,
- the number of transplants a person should be eligible for,
- the circumstances under which only palliative care should be provided, and
- the use of presumed consent for organ recovery.

This debate should be inclusive of all the divergent views and all opinions should be given consideration. There will be differences of opinion and disagreements, but they should not be allowed to become personal. For over 200 years, Americans have debated issues from independence from England to immigration reform. Not always, but in most cases, following a heated, passionate debate, a compromise and consensus was reached and the country moved forward. Not everyone was satisfied, but all had the opportunity to express an opinion. More recently, this has changed and anyone disagreeing with a stated position was attacked personally. A question raised about the financial impact of a proposed Medicare program would be met with a charge that the individual asking just "didn't like older folks." If this continues, an ideal system of care will never be developed.

It is for the leaders in health care to make sure the debate and discussion happens. The disagreements that should be present and be given proper consideration must remain civil. As the late senator Barry Goldwater once said, "To disagree, one doesn't have to be disagreeable."[3]

THE PROPER ROLE OF THE GOVERNMENT

The Founding Fathers wanted a government that provided for the common defense and promoted the general welfare. They were well educated and highly literate. But they did not have access to modern computers and word processing. They wrote in long hand with quill and ink on parchment paper. As a result they were economic in the use of language; there was no room for verbosity. Had they wanted the government to *provide* the public welfare, they would likely have written, "Provide for the common defense and the general welfare." But they chose the word "promote." When it comes to health care, that choice of words should be kept in mind. There is a role for the government, but it is not as a provider.

In its role as a promoter of public welfare, the government's efforts should be to do the following:

- Educate the public about the health care system. Provide information on healthy diets, the importance of exercise, healthy lifestyles, and health in general. Explain how individuals can reduce their cost of care. Inform the public about its health care rights and responsibilities.
- Establish and enforce realistic and appropriate standards for quality, patient safety, and responsiveness by which hospitals, nursing homes, physicians, and other providers operate.
- Establish and enforce standards by which insurance companies must operate in such matters as claims processing practices and transparency in coverage determinations.
- Facilitate the development of the ideal health care system. This includes developing, with appropriate public and stakeholder involvement, a national health policy. A national health financing policy should also be developed to drive reimbursement by both government and private payers.
- Balance the marketplace. This means playing an appropriate regulatory role with common sense regulations that specify what should happen but avoid saying how it will happen. That is a role for individual providers and is analogous to specifying that everyone must have a car but not specifying the brand, color, or accessories. This role includes protecting all parties from unethical practices.

The free marketplace should be allowed to exercise its power to bring about innovation and improve services. Much as it did in improving telecommunications, the free marketplace can bring about significant change across the system. It was not that long ago that there was a single phone

company. It was nearly 70 years after the introduction of the first dial phone in Indiana before the first major change—the princess phone—hit the market. Since the breakup of the phone company monopoly and the entry of other providers into the marketplace, innovations have brought significant improvements. In less than half the time needed to go from a dial phone to a princess phone, the industry has seen an explosion in innovation with the introduction of cordless phones, cell phones, smart phones (with cameras, e-mail, text messaging, Internet, and video), and on and on. The marketplace is a powerful driver of quality, innovation, and cost reduction, and its power can improve health care if it is properly controlled but not stifled.

There is, however, a dark side to the market and that must be guarded against. This, too, can be a viable role for the government. Provision must be made for the appropriate treatment of bad debts and charity care. Reasonable and proper regulation can help avoid abuses. Minimum charity care targets (e.g., x% of net revenue) can be established and enforced as part of the tax code. A penalty might be incorporated into the tax code for those refusing to pay their bills. Health care organizations must be allowed to earn reasonable profit margins that can support training the next generation of providers, investing in new technologies and programs, and gaining access to capital. Pharmaceutical and equipment company profits must be sufficient to support research and development of new medications and technologies.

SOME IDEAS

Americans have struggled for many years to develop solutions to the problems associated with health care: high cost, availability of insurance coverage, portability of coverage when workers change employers, and so on. Individuals are largely isolated from information about how much various health interventions cost. This compounds the problem. Simply stated, Americans seem to react when they are directly required to pay a bill. The following ideas may help resolve some of this.

First, employers should no longer provide health insurance for their workers. Instead, borrowing from the auto insurance model, individual Americans should buy their coverage directly. The amount of money spent by employers for insurance premiums should be transferred out of the fringe benefits accounts and added to the wages of the workers. Then, the workers can use that money, and any other amount they would like to contribute to the pot, to buy the kind of coverage that makes sense for their individual circumstances. It makes no sense at all for an unmarried

62-year-old worker to purchase health insurance that includes maternity coverage. As long as they buy basic coverage for hospital and physician services, people should be free to choose their types and levels of coverage (deductible amount, dental coverage, maternity coverage, etc.).

Employers should aggregate their workers to leverage volume buying for premiums, but individuals must own the policy and the coverage. This makes the insurance coverage portable from one employer to another. Coupled with this shift, Medicare and Medicaid should abandon their roles as payers. Instead, beneficiaries should be given vouchers that can be used to purchase insurance directly at the levels of coverage and deductibles that make sense for them as individuals. As with the employer shift, Medicare and Medicaid can aggregate beneficiaries to increase purchasing power. These two government programs could also serve as providers of last resort for catastrophic coverage.

This fundamental change provides people with "skin in the game" by getting them directly involved financially with their insurance and care. Just as in the auto insurance model, people will become prudent buyers of both insurance coverage and care.

Competition in an open marketplace can drive the insurance companies to offer better services and prices. Publish prices for all medical services and insurance policies. Let people exercise their brains and free will and make decisions for themselves.

In health care, the term "frequent flyer" often applies to those patients who visit hospital emergency departments every couple of weeks. They know the staff by name! But in this case, the term "frequent flyer" refers to another way to provide patients with "skin in the game" by allowing them to earn points for healthy lifestyle choices. It would work this way.

At birth, all people receive a social security number; and it could become their lifetime health care membership number. Throughout their life, each time they do something that promotes good health—well-baby doctor visits, health club memberships, maintaining an appropriate body mass index, immunizations, and so on—they would earn points, just like frequent flyers. Just as frequent flyers can use their points for seat upgrades, merchandise, and free flights, the health points could be used to supplement cash in the purchase of coverage, to buy added levels of coverage, and to pay their deductibles. Preexisting conditions would not be a problem as long as people maintained their basic coverage. Catastrophic coverage could be purchased using health points.

A basic change in health insurance coverage is required. Everyone must pay the same prices. Modest and reasonable discounts (in the range of

2% to 4%) should be allowed for insurance companies for prompt payment of bills and volume business. Both of these are common practice in other industries. Individuals should also be allowed a prompt payment discount. Larger discounts unfairly shift cost from one payer to others and are unethical. The following scenario illustrates this problem:

The hospital has an underlying cost profile that requires it to charge $10 for each service that it provides. This charge allows it to cover its costs and generate a modest, and necessary, profit, which it will then reinvest in new equipment, improved services, and so on. The mix of patients in this hospital is 60% Medicare, 30% Medicaid, and 10% self-pay. Medicare and Medicaid pay 50% of what the hospital bills for services. As a result, the self-pay patient must pay multiples of the charge. Assume, for illustration purposes, that the hospital charges for just three services and needs to be paid a total of $30 (3 × $10).

As shown in Table 17.2, for the three services provided, Medicare and Medicaid pay only half of the $10 charge. From those two payers, the hospital has received $10, but it needs to receive a total of $30. Who pays the difference? The self-pay patient is billed $20 and is expected to pay the full $20.

Some in government, the press, and academia claim that being charged four times what Medicare and Medicaid pay is ripping off the self-pay patient. They claim this is unethical. It is unethical—for Medicare and Medicaid (and other insurers) to make such low-ball payments that the self-pay patient has to be charged so much. Some have even suggested that law and regulation should be such that nobody should pay more than Medicare. If that were the case, this hospital would have received $15 to cover $30 worth of cost and would eventually close its doors.

No other industry acts this way. No other group of consumers acts this way. What would happen if a person arrived at the supermarket checkout and instead of paying the $120 the clerk rang up on the cash register wrote out a check for $60 and told the clerk to collect the rest from some

Table 17.2
Charges versus Payments

	Charge	Payment
Medicare	$10	$5
Medicaid	10	5
Self-pay	20	20
Total paid		$30

other customer? How long would that person be allowed to shop at that supermarket?

One reason prices are so high is that of cost shifting from Medicare and Medicaid (and to a similar but slightly lesser degree the other insurance payers) onto the backs of self-paying patients. In Maryland, this sort of large-scale discounting is illegal. If hospital A charges $2,500 for a specific procedure, it will be paid $2,500 (minus a modest discount for volume and prompt payment) by every single payer: Medicare, Medicaid, Blue Cross, self-pay, and so on. In Maryland, there is no cost shifting.

Much has been said about the impact of malpractice on the cost of health care. Premium costs, payments to plaintiffs (via cases won in court or paid for an out-of-court settlement), legal defense costs, and practicing defensive medicine all add up. The debate is not about their existence but the impact on overall health care cost. Many suggest it is such a small amount, perhaps just a few percentage points of total spending, that it doesn't warrant any attention. But in the complicated world of health care, any and every spending bucket deserves attention. Patients who are harmed should be able to seek redress. But frivolous lawsuits (the ugly people mentioned in Chapter 1) should be discouraged. Three things can be done to reduce the overall cost.

First, tort reform is necessary. There is no disincentive for plaintiffs. Whether a case has merits or not, the plaintiff can win some monetary amount either in court or as part of a settlement. To correct this imbalance, the loser in any malpractice case should pay all of the legal costs. Second, lawyers should be barred from taking cases on contingency—they have nothing to lose and everything to gain from unwarranted litigation. Third, some consideration should be given to establishing a health care claims review court that could function like a grand jury. It would not establish guilt or innocence but would decide only if there was sufficient cause for a plaintiff to pursue a malpractice suit.

The Veterans Administration Health System has long been the subject of criticism for lengthy delays, bureaucratic approaches to management, and the quality of care provided. Reform efforts and leadership changes have not resulted in the kind of service the public wants and veterans deserve. The challenge is an entrenched culture. And so, rather than continue with further changes in leadership, perhaps it is time to consider a more creative, "out-of-the-box" solution. Close all or a major part of the VA system and give veterans a "gold card" that they could use at any hospital, clinic, or doctor's office they wanted. Vets would gain access to world-class providers whose customer service is superior to the VA and whose quality is unquestioned. The added volume could be absorbed by the nation's

underutilized private hospitals. This underutilization will likely get worse as population health and other such initiative drive down hospital volume. In essence, the volume hospitals lose could be replaced by new, former VA business. The private hospital costs would certainly rise but not significantly. By closing capacity at the VA, costs would be eliminated. The result would be better, more responsive care for deserving veterans and improved cost efficiency and financial conditions for the private hospitals.

Certainly there are other issues and other proposals and ideas put forth. All should be carefully examined, and none should be discarded out of hand. It is important to guard against a "that can't be done because. . ." attitude. Too often the initial reaction to any new idea is to identify all the reasons why it will not work. Anybody can say something cannot work. A better, more productive approach is to look for the wisdom of any idea and look for ways to make it work. Naysayers have been around forever. Lee De Forest, an American inventor, believed that the commercial and financial success of television was impossible.[4] Thomas Watson, the founder and president of IBM, once opined that there was a world market for about five computers.[5] And William Thompson, Lord Kelvin, the English scientist and president of The Royal Society, once said that "x-rays are a hoax."[6]

The conventional wisdom no longer applies, and "outside the box" thinking to solve problems is desperately needed. Leaders and managers in health care must shrug off naysayers and look for opportunities everywhere. Peter Drucker, the famous management expert, long ago advised that "the best way to predict the future is to create it."[7] That advice is certainly applicable in today's health care environment.

NOTES

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3. Barry Goldwater (n.d.). BrainyQuote.com. http://www.brainyquote.com/quotes/quotes/b/barrygoldw132521.html.
4. Mark Gawlinski, *Interactive Television Production*, Focal Press, London, UK, 2003.
5. Ronert Strohmeyer, "The 7 Worst Tech Predictions of All Time," *PCWorld*, December 31, 2008.
6. Christopher Cerf and Victor Navasky, *The Experts Speak: The Definitive Compendium of Authoritative Misinformation*, Pantheon Books, New York, NY, 1984.
7. "Joe's Journal: On Creating the Future," The Drucker Institute, May 24, 2011, http://www.druckerinstitute.com/2011/05/joes-journal-on-creating-the-future/.

APPENDIX 1

Typical Audit Opinion Letter

INDEPENDENT AUDITOR'S REPORT

[*Appropriate Addressee*]

Report on the Financial Statements

We have audited the accompanying consolidated financial statements of [the organization] and its subsidiaries, which comprise the consolidated balance sheets as of [Date], 20XX and 20XX, and the related consolidated statements of income, changes in stockholders' equity, and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of [the organization] and its subsidiaries as of [Date], 20XX and 20XX, and the results of their operations and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Other Legal and Regulatory Requirements

The form and content of this section of the auditor's report will vary depending on the nature of the auditor's other reporting responsibilities.

[*Auditor's signature*]

[*Auditor's address*]

[*Date of the auditor's report*]

APPENDIX 2

Practice Problems

CHAPTER 2—BASIC BUSINESS AND ACCOUNTING CONCEPTS

Problem 2.1

The accounts receivable balance on November 30, 20XX, is $6,300,000 and the allowance for doubtful accounts is $1,200,000. The receivable is made up of numerous accounts billed during the last several months as follows:

Billed In	Amount	Collection Probability (%)
November, 20XX	$3,000,000	100.0
October, 20XX	1,500,000	100.0
September, 20XX	500,000	97.5
August, 20XX	400,000	95.0
July, 20XX	300,000	90.0
June, 20XX	200,000	85.0
May, 20XX	100,000	80.0
April, 20XX	100,000	75.0
March, 20XX	50,000	50.0
February, 20XX	100,000	25.0
January, 20XX	50,000	10.0

Prepare an accounts receivable aging analysis. Based on the analysis, what is the value of the accounts receivable?

Problem 2.2

A diagnostic services company acquired digital angiography equipment on January 1 for $1,300,000. The useful life of the equipment is 10 years and the salvage value is $200,000. Using the "sum of the years digits" depreciation method, how much depreciation expense will be recorded each year over the life of the equipment?

Problem 2.3

An organization acquired new computer scheduling equipment on January 1 for $4,000,000. The useful life of the equipment is eight years and the salvage value is $400,000. Using the "double declining balance" depreciation method, how much depreciation expense will be recorded each year over the life of the equipment?

Problem 2.4

A new business venture will begin operation on July 1, 20X3. Staff will be hired effective January 1, 20X3, at a cost of $40,000 per month. It is known from experience that collections lag billing by three months (in other words, once the company bills for a service, it must wait 90 days for the payment to be received). The business projects its monthly billing to be as follows:

Month	Billing
July, 20X3	$100,000
August	100,000
September	100,000
October	100,000
November	100,000
December	100,000
January, 20X4	100,000
February	100,000
March	100,000
April	100,000
May	100,000
June	100,000

If the company has $400,000 of cash on hand on January 1, 20X3, how much cash will it have at the end of June 20X4? Assume a 100% collection rate.

CHAPTER 3—COST AND COST BEHAVIOR

Problem 3.1

Using the following information, develop a set of prices for the three revenue centers (inpatient services—price per patient day, outpatient services—price per visit, and ancillary services—price per procedure), which will generate a profit of $5,400,000.

Overhead is allocated directly to the revenue centers from the overhead centers on the basis of direct expense. The historical collection rate is 80%. Volumes are anticipated to be 35,200 inpatient days, 88,000 outpatient visits, and 26,400 ancillary procedures.

Department	Direct Expense
Administration	$3,000,000
Finance	2,000,000
Support services	4,000,000
Inpatient services	20,000,000
Outpatient services	10,000,000
Ancillary services	15,000,000

Problem 3.2

The following table displays information about the cost profile of your department. What is the average cost of an encounter? What is the marginal cost of an encounter?

Description	Amount
Fixed costs	$450,450
Variable costs	110,000
Total costs	$560,450
Annual volume (encounters)	55,000

CHAPTER 6—THE OPERATING BUDGET

Problem 6.1

A time and motion study has been conducted in a testing department and has determined that workers can perform six tests per hour. The department will perform 1,060,000 tests in the coming budget year. Productive time in the department is 85% of paid time. How many staff FTEs will be needed?

Problem 6.2

Using the information provided, prepare a salary budget for FY20X4 (7/1/20X3 to 6/30/20X4). Volume in the budget year is planned to be 5,400 procedures and staff needs are for six hours of worker time for each procedure. Productive time is 85% of total paid time. For purposes of this solution, the assumption is that workers can be hired only in half FTE increments (e.g., if you calculate a need for 12.8 FTEs, you would need to hire 13 FTEs). A pay raise will be given to all staff on May 1 of each year at a rate of 6%. The July 1, 20X3, rate of pay for new hires is set at $13.00/hour regardless of hire date. The following are the current staff with FTE values and hourly rates of pay as of December 10, 20X2:

Name	FTE Value	Pay Rate
Classen	1.0	$14.30
Thompson	1.0	13.80
Ward	0.5	13.50
Ettinger	1.0	14.00
Kelley	0.5	12.75
Oldham	1.0	14.20

Problem 6.3

Prepare a budget for FY 20X4 for a department that is expected to perform 21,900 units of work output during the budget year. The budget guidelines issued by the finance staff indicate that inflation will run at 10% for the budget year. Prepare a budget for supplies and services. The following

data are available for consumable supplies ("V" indicates variable expense items; "F" indicates fixed items):

Your Department Report
Departmental Expense Report
January 1–May 31, 20X3

Description	Amount
Office supplies (F)	$2,500
Medical supplies (V)	18,000
Solutions (V)	13,500
Maintenance (F)	1,500
Contract services (F)	600
Stock drugs (V)	10,500
Books and periodicals (F)	500
Miscellaneous (F)	1,000
Total supple expense	$48,100
Volume of business	9,000

Problem 6.4

A researcher is putting together a grant application for a research project that will study the effect of a new drug to treat budgetitis. The grant will cover three years beginning on January 1, 20X2. The following information with which to prepare the budget is available.

The principal investigator (PI) will be on the grant at 50% of effort. Since the lab is already fully equipped, no new equipment is required; however, five lab techs and two senior research assistants will be added as part of the team. Supplies for the lab include 500 Norwegian brown mice and the associated feed and supplies, lab ware, and office supplies.

The PI's current salary is $200,000 as of January 1, 20X1. The department of Laboratory Animal Medicine will provide mice for a cost of $15 per mouse per month inclusive of feed, cages, and all other needs. The pay rate for lab techs is $45 per hour. The rate for senior research assistants is $65/hour. The fringe benefits rate is 25% of salaries. Based on previous research projects, office supplies are estimated to run $150 per month. Lab ware will cost $1,000 per month. Salaries are expected to grow by 5% each year, while supply inflation is expected to be 3% per year.

Problem 6.5

Assuming that 20% of paid time is spent away from the workplace on vacation, sick time, holiday, and so on, how many FTEs of staff are needed to perform 80,000 screening tests if each test requires 45 minutes of time for the actual test and an additional 15 minutes of setup and clean uptime per test?

Problem 6.6

Prepare a revenue budget that includes both gross and net revenue for the upcoming fiscal year. The target use rate is 80% of capacity. The department is capable of performing 27,375 tests annually. The business is evenly divided: half the patients are covered by health insurance that will reimburse at 80% of charges. The other half comprised wealthy, uninsured patients who pay 100% of charges. The price charged for the service is $500.

Problem 6.7

The following table indicates the annual volume experienced for the most recently completed fiscal years and the first five months of the current fiscal year (FY 20X8). Based on this information, how many units of service should be planned for in the coming budget year?

Fiscal Year	Volume
20X3	2,302
20X4	2,404
20X5	2,512
20X6	2,626
20X7	2,745
20X8 YTD (1/1/X8–5/31/X8)	1,195

CHAPTER 9—FINANCIAL STATEMENTS

Problem 9.1

Using the audited financial statements of the Care Giver Healthcare Center, calculate the following financial ratios: current ratio, quick ratio, the number of days of revenue in accounts receivable, return on assets, long-term debt to equity, and the collection rate.

Care Giver Healthcare Center
Balance Sheet
December 31, 20X1

Assets		
Current assets		
Cash and marketable securities		$2,000,000
Accounts receivable	$20,000,000	
Allowance for doubtful accounts	1,500,000	18,500,000
Inventory		500,000
Other current assets		100,000
Total current assets		$21,100,000
Fixed assets		
Land		$2,000,000
Buildings	$15,000,000	
Equipment	5,000,000	
	$20,000,000	
Accumulated depreciation	4,000,000	16,000,000
Total fixed assets		$18,000,000
Total assets		$39,100,000
Liabilities and net assets		
Current liabilities		
Accounts payable		$5,000,000
Accrued payables		500,000
Salaries and payroll taxes payable		100,000
Current portion of long-term debt		1,500,000
Total current liabilities		$7,100,000
Long-term liabilities		
Bonds payable	$15,000,000	
Pension liability	3,000,000	
Total long-term liabilities		18,000,000
Net assets		
Opening balance	$12,000,000	
FY 2000 profit	2,000,000	
Ending balance		14,000,000
Total liabilities and net assets		$39,100,000

Care Giver Healthcare Center
Statement of Support, Revenue, and Expenses
For the Year Ended December 31, 20X0

Gross revenue from patients		$30,000,000
Less deductions from revenue		
Provision for bad debts	$2,000,000	
Charity care	1,000,000	
Discounts	3,000,000	6,000,000
Net revenue from patients		$24,000,000
Other operating revenue		1,000,000
Total revenue		$25,000,000
Operating expenses		
Salaries		$16,200,000
Fringe benefits		3,240,000
Supplies and services		2,000,000
Interest		560,000
Depreciation		1,000,000
Total expense		$23,000,000
Excess of revenue over expense		$2,000,000

Problem 9.2

Several different payers reimburse for a new diagnostic test. Each pays a different percentage of the charge. Program 1 will cover 80% of charges for 15% of the patients; program 2 will pay 70% of charges for 20% of the patients, program 3 will pay 60% of charges for 5% or the patients, program 4 will pay 80% of charges for 10% of the patients, and program 5 will pay 90% of charges for 50% of the patients. What is the average collection rate and what amount will be collected if the charge is $550 for each test?

CHAPTER 11—ANALYTICAL TOOLS

Problem 11.1

Using the following performance data, calculate the volume-adjusted labor rate variance and volume-adjusted efficiency variance. The department is considered 60% variable.

	Actual	Budget
Salaries	$314,000	$345,400
Payroll hours	10,000	11,000
Service volume	240,000	300,000

Problem 11.2

Explain the cause(s) of the salary variance. The department is considered 100% fixed. Actual salaries were $228,800 versus a budget of $237,120. Paid hours were 20,800 compared to a budget of 19,760. There were 21,000 units of service provided while the budgeted amount was 20,000.

Problem 11.3

Use the following information about supply consumption to determine the usage and price variances. The department is considered to be 100% variable with volume. Actual units of service were 70,000 compared with a budget of 140,000.

Supply Item	Actual	Budget	Actual	Budget
Item A	$7,920	$2,625	1,800	750
Item B	8,576	6,972	1,500	1,599
Item C	4,530	4,983	1,753	1,524
Total	21,026	14,580		

Problem 11.4

Prepare a forecast of expenses for the entirety of fiscal year 20X3 which runs from January 1 to December 31, 20X3. In addition to the numbers shown in the most recent Departmental Expense Report, the following information is provided. In January, the department purchased a maintenance contract for the entire year at a cost of $12,000. Med/surg supplies amounting to $15,000 that had been purchased last fiscal year were returned to the vendor for a credit. Finally, it is anticipated that two clerks will be hired effective July 1 at rates of pay of $22,000 plus fringe benefits

of 20%. Volume for the rest of the year is anticipated to be 2,000 units of service each month from June 1 through year end.

Departmental Expense Report
January 1–May 31, 20X3

Description	Amount
Office supplies (F)	$500
IV solutions (V)	64,000
Maintenance contracts (F)	12,000
Dues and memberships (F)	250
Med/surg supplies (V)	180,000
Stock drugs (V)	38,000
Books and periodicals (F)	50
Miscellaneous (F)	1,000
Total	$295,800
Units of service	9,000

Problem 11.5

A new procedure for which demand is anticipated to be 1,200 units annually can be offered at a price of $1,400. The patient population is anticipated to be 80% commercially insured patients and 20% self-paying (noninsured) patients. The expected collection rates are 90% for commercial insurance and 50% for self-paying patients. Each procedure consumes $300 of supplies. Salary is estimated to cost $600,000 each year, fringe benefits are 25% of salaries, and depreciation each year is $140,000. Develop a marginal P&L for this business opportunity.

Problem 11.6

Currently, pharmacy costs in the hospital's ICUs average $2,600 per case. The hospital is paid entirely on a DRG-based payment system. On average, the surgical intensive care unit (SICU) and medical intensive care unit (MICU) treat 30 cases each per month. It has been asserted that a clinical pharmacist assigned to each ICU could reduce pharmaceutical use by 25%. A clinical pharmacist is paid $90,000 plus fringe benefits of 25%. Does it make financial sense to hire two clinical pharmacists to cover the ICUs?

Problem 11.7

A new procedure can be offered at a price of $1,500. The collection rate is expected to be 75%. Demand is anticipated to be 800 units in year one, growing by 25% each year thereafter until the end of year five. Each procedure consumes $400 of supplies. Salaries are estimated to be $50,000 a year each for 10 FTEs plus an additional 20% for fringe benefits. Fixed operating costs are $8,000 per month and annual rent is $20,000/year. Develop a marginal P&L for this business opportunity. Based on that P&L, should this opportunity be pursued?

Problem 11.8

A new piece of equipment with a life of six years will make a clinical operation more efficient. The equipment purchase price is $4,500,000 plus a 10% installation fee. The purchase price includes maintenance service for the first year, an item that has an annual cost of $10,000. There is a potential for additional volume of 150,000 units in the first year, growing by 30,000 units each year thereafter. The price to be charged per unit is $15.00 with a 50% collection rate. Ten FTEs of staff will be eliminated because of this technology. Each is paid $12.50 per hour. The fringe benefits rate is 20%. The hurdle rate is 7.5%. The department's operating capacity is 220,000 units of volume per year. What is the net present value, the benefit/cost ratio, and the average payback period for this investment?

Problem 11.9

A business that operates 7 days a week, 24 hours a day, is looking for ways to improve its bottom-line performance. One possibility is a new automated charting system that will allow for a savings of three hours of staff time per shift in departments A, B, C, D, and E and one hour per shift in department Z (all shifts are eight hours long). The system will be installed in all six departments. Salaries are $17/hour for staff in all departments except department Z in which staff are paid $24 per hour. The fringe benefits rate is 25%. Operating costs of the system are $2,000 per station annually plus an additional $3,000 per station per year for a maintenance contract. The acquisition price of the system is $200,000 per station (one station is needed for each department) and includes maintenance for the first year. Installation costs are $30,000 per unit. The hurdle rate is 12%. What is the benefit/cost?

Problem 11.10

A new diagnostic procedure can be offered at a price of $25 per test. The patient population is anticipated to be 40% commercially insured patients, 40% Medicare, and 20% self-paying. The expected collection rates are 89.5% for commercial insurance, 80% for Medicare, and 86% for self-paying patients. Each procedure consumes $20 of supplies. Fixed costs are anticipated to be $250,000. The machinery needed to perform the tests is operated on a five-day-a-week basis and can perform 800 tests per day. Four times a year the machinery must be taken out of service and recalibrated, a procedure that requires a week to complete. Demand is expected to be 250,000 units. What is the breakeven point for this opportunity? Should the opportunity be pursued?

Problem 11.11

A new service can be offered at a price of $1,100. Demand is anticipated to be 8,000 units a year. The business is able to handle up to 16,500 units annually, so capacity should not be a problem. The average collection rate is 80%. The new service has annual fixed costs of $5,000,000. Variable cost per unit of service is $480. Capacity is 14,000 units of volume. What is the breakeven point? Should the opportunity be pursued?

Problem 11.12

A colleague has suggested hiring a nurse practitioner (NP) for a physician practice. The annual salary cost is estimated to be $83,000 plus fringe benefits of an additional 25%. The current charge for an NP visit is $50 and the collection rate is 75%. If an NP can see 400 visits per month, should one be hired?

Problem 11.13

Memorial Community Hospital performs 500 hip replacements each year. The average reimbursement is $10,000 per case. The direct cost of the procedure averages $11,500, which includes marginal cost of $4,500 for the implant and other intraoperative supplies. Finance has expressed concerns about the program losing money based on the following financial analysis.

Hip replacement procedures	500
Average reimbursement per hip procedure	$10,000
Total net revenue for hip procedures	$5,000,000
Hip replacement procedures	500
Average direct cost per procedure	$11,500
Total direct cost for hip procedures	$5,750,000
Profit or (loss) from hip procedures	($750,000)

The hospital quality improvement team has identified a process improvement that will reduce average length of stay and allow the hospital to perform an additional 50 hip replacement procedures each year. Assuming that the reimbursement rate and costs remain unchanged, should this improvement initiative be implemented?

Problem 11.14

A cost analysis of a ABC Health Clinic has been performed and has determined the following: Based on the latest three years of information, your annual cost of operations is $1,600,000 with annual volume of 10,000 procedures. ("F" indicates a fixed cost and "V" indicates variable.)

Cost Items	F/V	Average Annual Amount	Cost Items	F/V	Average Annual Amount
Supply item 1	F	$220,000	Supply item 6	F	$50,000
Supply item 2	F	180,000	Supply item 7	V	500,000
Supply item 3	F	75,000	Supply item 8	V	300,000
Supply item 4	F	50,000	Supply item 9	V	200,000
Supply item 5	F	25,000	Total		$1,600,000

An insurance company that is considering directing its 1,000 units per year of procedure business to ABC Health Clinic has approached the organization. For the last three years, the organization has been charging a price of $165 per procedure (with a 100% collection rate). Assuming the board has mandated that $5 of profit be generated by each of the procedures, what is the lowest price that could be accepted from this payer?

Problem 11.15

The following cost performance data have just become available. Use bilateral performance mapping to determine which departments should be examined first and last for possible cost improvement.

	Better or (Worse) Than Comparison Group	Better or (Worse) Than Self in Prior Period
Department A	8.00%	–4.00%
Department B	–7.50%	2.50%
Department C	6.00%	–1.00%
Department D	–5.50%	–3.50%
Department E	5.00%	4.00%
Department F	4.00%	5.00%
Department G	–3.50%	–5.50%
Department H	–1.00%	6.00%
Department I	2.50%	–7.50%
Department J	–4.00%	8.00%

CHAPTER 12—IMPROVING PERFORMANCE

Problem 12.1

A physician's practice performs five procedures that consume varying amounts of salary, supply, and service resources. Procedure A requires $150 per procedure for salaries, $50 for supplies, and $250 for purchased services. Procedure B requires $125 per procedure for salaries, $25 for supplies, and $100 for purchased services. Procedure C requires $300 per procedure for salaries, $150 for supplies, and $50 for purchased services. Procedure D requires $200 per procedure for salaries and $100 for supplies. Procedure E requires $100 per procedure for salaries, $50 for supplies, and $50 for purchased services. Develop a relative value scheme for these services.

APPENDIX 3

Practice Problems Solutions

Problem 2.1

Billed in	Amount	Collection Probability	Accounts Receivable Value
November, 20XX	$3,000,000	100.0%	$3,000,000
October	1,500,000	100.0	1,500,000
September	500,000	97.5	487,500
August	400,000	95.0	380,000
July	300,000	90.0	270,000
June	200,000	85.0	170,000
May	100,000	80.0	80,000
April	100,000	75.0	75,000
March	50,000	50.0	25,000
February	100,000	25.0	25,000
January	50,000	10.0	5,000
	$6,300,000		$6,017,500

Problem 2.2

Sum of the years digits method	
Asset acquisition cost	$1,300,000
Salvage value	200,000
Depreciable amount	$1,100,000

Year	Remaining Years	Depreciation Amount
1	10	$200,000
2	9	180,000
3	8	160,000
4	7	140,000
5	6	120,000
6	5	100,000
7	4	80,000
8	3	60,000
9	2	40,000
10	1	20,000
55		$1,100,000

Problem 2.3

Double declining balance depreciation	
Asset acquisition cost	$4,000,000
Salvage value	400,000
Depreciable amount	$3,600,000

Depreciable live = 8 years
Annual percent = (1/8) × 2 = 25%

Year	Depreciation Amount	
1	$1,000,000	1,000,000
2	750,000	1,750,000
3	562,500	2,312,500
4	421,875	2,734,375
5	316,406	3,050,781
6	237,305	3,288,086
7	177,979	3,466,064
8	133,935	3,599,999
	$3,600,000	

Problem 2.4

Month	Billing Amount	Collections	Expenses	Monthly Cash Flow	Cash Balance
					$400,000
July, 20X3	$100,000		$40,000	–$ 40,000	360,000
August	100,000		40,000	– 40,000	320,000
September	100,000		40,000	– 40,000	280,000
October	100,000	$100,000	40,000	60,000	340,000
November	100,000	100,000	40,000	60,000	400,000
December	100,000	100,000	40,000	60,000	460,000
January, 20X4	100,000	100,000	40,000	60,000	520,000
February	100,000	100,000	40,000	60,000	580,000
March	100,000	100,000	40,000	60,000	640,000
April	100,000	100,000	40,000	60,000	700,000
May	100,000	100,000	40,000	60,000	760,000
June	100,000	100,000	40,000	60,000	820,000

Problem 3.1
Direct stepdown method

	Direct Expense	Allocation Percentages	Overhead Allocation Amounts			Total Expense
Administration	$3,000,000		(3,000,000)			
Finance	2,000,000			(2,000,000)		
Support services	4,000,000				(4,000,000)	
Inpatient	20,000,000	44.44%	1,333,333	888,889	1,777,778	24,000,000
Outpatient	10,000,000	22.22%	666,667	444,444	888,889	12,000,000
Ancillary	15,000,000	33.33%	1,000,000	666,667	1,333,333	18,000,000
Total	$54,000,000	100.00%	$0	$0	$0	$54,000,000
Profit target	5,400,000					
Total requirements	$59,400,000					
	1.1000	(total financial requirements/total cost)				

	Total Expense	Units of Service	Cost per Serving	Profit Mark-up	Net per Serving	Collection Rate Gross up	Price per Serving
Inpatient	$24,000,000	35,200	$681.82	1.1000	$750.00	/80%	937.50
Outpatient	12,000,000	88,000	136.36	1.1000	150.00	/80%	187.50
Ancillary	18,000,000	26,400	681.82	1.1000	750.00	/80%	937.50

Indirect stepdown method

	Direct Expense	Overhead Allocations					Total Expense
Administration	$3,000,000	(3,000,000)					
Finance	2,000,000	117,647	2,117,647	(2,117,647)			
Support services	4,000,000	235,294	4,235,294	172,869	4,408,163	(4,408,163)	
Inpatient	20,000,000	1,176,471	21,176,471	864,346	22,040,816	1,959,184	24,000,000
Outpatient	10,000,000	588,235	10,588,235	432,173	11,020,408	979,592	12,000,000
Ancillary	15,000,000	882,353	15,882,353	648,259	16,530,612	1,469,388	18,000,000
Total	$54,000,000	$0	$54,000,000	$0	$54,000,000	$0	$54,000,000
Profit target	5,400,000						
Total requirements	$59,400,000						
	1.1000	(total financial requirements/total cost)					

(*continued*)

Problem 3.1 (*continued*)

	Total Expense	Units of Service	Cost per Serving	Profit Mark-up	Net per Serving	Gross up	Price per Serving
Inpatient	$24,000,000	35,200	$681.82	1.1000	$750.00	/80%	$937.50
Outpatient	12,000,000	88,000	136.36	1.1000	150.00	/80%	187.50
Ancillary	18,000,000	26,400	681.82	1.1000	750.00	/80%	937.50

Proof

	Units	Price	Total
Inpatient	35,200	$937.50	$33,000,000
Outpatient	88,000	$187.50	16,500,000
Ancillary	26,400	$937.50	24,750,000
Gross revenue			$74,250,000
Collection rate			80.00%
Net revenue			$59,400,000
Total expense			54,000,000
Profit or (loss)			$5,400,000

Problem 3.2

Description	Amount
Fixed costs	$450,450
Variable costs	110,000
Total	$560,450
Annual volume (encounters)	55,000
Average cost per encounter	$10.19
Marginal cost per encounter	$2.00

Problem 6.1

Two different approaches

Annual tests budgeted	1,060,000
Tests per hour per worker	6
Productive hours required	176,667
Productivity rate	85%
Paid hours required	207,843
Paid hours per FTE	2,080
FTEs required	99.92
FTEs required - Rounded	100
Annual tests	1,060,000
Tests per hour per worker	6
Productive hours required	176,667
Paid hours per FTE	2,080
Preliminary FTE needs	84.9
Productivity rate	85%
FTEs required	99.92
FTEs required - Rounded	100

Problem 6.2

Budgeted procedures	5,400	Annual pay raise	6.0%
Hours per procedure	6	Months to year end	2
Total productive hours	32,400		
Productivity rate	85.00%		
Total paid hours	38,118		
Paid hours per FTE	2,080		
FTEs required	18.325792		
	18.5	Rounded	

						Salary Increase			
Incumbent	**FTE**	**12/10/X2 Rate**	**Increase Rate**	**7/1/X3 Rate**	**Base Budget**	**Months Effective**	**Rate**	**Amount**	**Salary Budget**
Classen	1.0	$14.30	6%	$15.16	$31,529	2	6%	$315	$31,844
Thompson	1.0	13.80	6%	14.63	30,426	2	6%	304	30,731
Ward	0.5	13.50	6%	14.31	14,882	2	6%	149	15,031
Ettinger	1.0	14.00	6%	14.84	30,867	2	6%	309	31,176
Kelley	0.5	12.75	6%	13.52	14,056	2	6%	141	14,196
Oldham	1.0	14.20	6%	15.05	31,308	2	6%	313	31,621
Vacant	13.5			13.00	365,040	2	6%	3,650	368,690
Total	18.5				$518,108			$5,181	$523,289

Problem 6.3

Budgeted volume 21,900
Budgeted inflation rate 10%

Description	Base Amount	Base Units	Amount per Unit	Budget Units	Base Budget	Inflation Rate	Inflation Amount	Total Budget
Office supplies	$2,500	5	$500.00	12	$6,000	10%	$600	$6,600
Medical supplies	18,000	9,000	2.00	21,900	43,800	10%	4,380	48,180
Solutions	13,500	9,000	1.50	21,900	32,850	10%	3,285	36,135
Maintenance	1,500	5	300.00	12	3,600	10%	360	3,960
Contract services	600	5	120.00	12	1,440	10%	144	1,584
Stock drugs	10,500	9,000	1.17	21,900	25,550	10%	2,555	28,105
Books and periodicals	500	5	100.00	12	1,200	10%	120	1,320
Miscellaneous	1,000	5	200.00	12	2,400	10%	240	2,640
Total	$48,100				$116,840		$11,684	$128,524

Problem 6.4

Salaries and Benefits	Base Amounts	Per	Effort Percentage	Annual Amount	20X2	20X3	20X4
Principal investigator	$200,000	Year	50	$100,000	$105,000	$110,250	$115,763
Senior research assistant	65.00	Hour	100	135,200	141,960	149,058	156,511
Senior research assistant	65.00	Hour	100	135,200	141,960	149,058	156,511
Lab tech	45.00	Hour	100	93,600	98,280	103,194	108,354
Lab tech	45.00	Hour	100	93,600	98,280	103,194	108,354
Lab tech	45.00	Hour	100	93,600	98,280	103,194	108,354
Lab tech	45.00	Hour	100	93,600	98,280	103,194	108,354
Lab tech	45.00	Hour	100	93,600	98,280	103,194	108,354
Total salaries				838,400	880,320	924,336	970,553
Fringe benefits	25%			209,600	220,080	231,084	242,638
Total salaries and benefits				$1,048,000	$1,100,400	$1,155,420	$1,213,191
Supplies and Services							
Labware	1,000.00	Month		$12,000	$12,360	$12,731	$13,113
Office supplies	150.00	Month		1,800	1,854	1,910	1,967
Mice	15.00	PMPM		90,000	92,700	95,481	98,345
Total supplies and services				$103,800	$106,914	$110,121	$113,425
PMPM = Per mouse per month							
Grand total				$1,151,800	$1,207,314	$1,265,541	$1,326,616
Assumptions							
Salary escalation	5%				Three year total request		$3,799,471
Supply inflation	3%						
Norwegian brown mice	500						

Problem 6.5

Screening tests	80,000
Worker time per test (hours)	0.75
Productive hours required	60,000
Productivity rate	80%
Paid hours required	75,000
Paid hours per FTE	2,080
FTEs required	36.06

Problem 6.6

Departmental capacity	27,375
Target use rate	80%
Targeted volume	21,900

	Business Share	Volume	Price	Gross Revenue	Collection Rate	Net Revenue
Insured patients	50%	10,950	$500	$5,475,000	80%	$4,380,000
Uninsured patients	50%	10,950	500	5,475,000	100%	5,475,000
Total	100%	21,900		$10,950,000		$9,855,000

Problem 6.7

Fiscal Year	Volume	Volume Growth (Units)	Volume Growth
20X3	2,302	–	–
20X4	2,404	102	4.4%
20X5	2,512	108	4.5%
20X6	2,626	114	4.5%
20X7	2,745	119	4.5%
20X8 (five months)	1,195		
20X8 annualized	2,868	123	4.5%
20X9	2,997	Based on 4.5% growth	
20X9	2,987–2,993	Based on growth of between 119 and 125 units	

Problem 9.1

Current ratio	2.97
Quick ratio	2.90
Days of revenue in accounts receivable	281
Return on assets	5.12%
Long-term debt to equity	1.29
Collection rate	80.0%

Problem 9.2

Category	Proportion	Collection Rate	Aggregate Rate
Program 1	15.00%	80.00%	12.00%
Program 2	20.00%	70.00%	14.00%
Program 3	5.00%	60.00%	3.00%
Program 4	10.00%	80.00%	8.00%
Program 5	50.00%	90.00%	45.00%
Total	100.00%		82.00%
Price charged per test			$550.00
Net revenue per test			$451.00

Problem 11.1

Actual volume	240,000
Budget volume	300,000
Variable expense factor	60.0%
Volume change factor	(20.0)%
Volume adjustment factor:	(12.0)%

Description	Actual	Budget	Variance (Unfavorable)
Salaries	$314,000	$345,400	$31,400
Volume adjustment		(41,448)	(41,448)
Volume-adjusted salaries	$314,000	$303,952	($10,048)
Paid hours	10,000	11,000	1,000
Volume adjustment		(1,320)	(1,320)
Volume-adjusted paid hours	10,000	9,680	(320)
Average labor rate	$31.40	$31.40	$0.00
Labor rate variance		–	
Efficiency variance		($10,048)	
Total variance		($10,048)	

Problem 11.2

Actual volume	21,000
Budget volume	20,000
Variable expense factor	100.0%
Volume change factor	5.0%
Volume adjustment factor	5.0%

Description	Actual	Budget	Variance (Unfavorable)
Salaries	$228,800	$237,120	$8,320
Volume adjustment		11,856	11,856
Volume-adjusted salaries	$228,800	$248,976	$20,176
Paid hours	20,800	18,760	(2,040)
Volume adjustment		938	938
Volume-Adjusted paid hours	20,800	19,698	(1,102)
Average labor rate	$11.00	$12.64	$1.64
Labor rate variance		32,298	
Efficiency variance		(12,122)	
Total variance		$20,176	

Problem 11.3

70,000	Actual volume
140,000	Budgeted volume
100.0%	Variable expense factor
–50.0%	Volume change factor
–50.0%	Volume adjustment factor

	Spending						Usage						Unit Price			Variance		
Supply Item	Actual	Budget	Variance	Volume Adjustment	Volume-Adjusted Budget	Volume-Adjusted Variance	Actual	Budget	Variance	Volume Adjustment	Volume-Adjusted Budget	Volume-Adjusted Variance	Actual	Budget	Variance (Unfav)	Usage	Price	Total
Item A	$7,920	$2,625	–$5,295	–$1,313	$1,313	–$6,608	1,800	750	–1,050	–375	375	–1,425	$4.40	$3.50	–$0.90	–$6,270	–$338	–$6,608
Item B	8,576	6,972	–1,604	–3,486	3,486	–5,090	1,500	1,599	99	–800	800	–701	5.72	4.36	–1.36	–4,005	–1,085	–5,090
Item C	4,530	4,983	453	–2,492	2,492	–2,039	1,753	1,524	–229	–762	762	–991	2.58	3.27	0.69	–2,561	522	–2,039
Totals	$21,026	$14,580	–$6,446	–$7,290	$7,290	–$13,736										–$12,836	–$900	–$13,736

Problem 11.4

Based on year to date data at 5/31/X3

Description	Fixed	Variable	Total
Year to date expense	$13,800	$282,000	$295,800
Adjustments			
Add back "one-time" credits		15,000	$15,000
Deduct "one-time" expenses	(12,000)		(12,000)
Adjusted total	$1,800	$297,000	$298,800
Annualization			
Divide by days/months/etc.	5		
Divide by volume		9,000	
Multiply by days/months/etc.	12		
Multiply by volume		23,000	
Annualized amounts	$4,320	$759,000	$763,320
Adjustments			
Add back "one-time" expenses	12,000		12,000
Deduct "one-time" credits		(15,000)	(15,000)
Events thru year end (+/–)	26,400		26,400
Expense forecast as of 12/31/X3	$42,720	$744,000	$786,720

Problem 11.5

Marginal revenue		
Units of volume	1,200	
Price	$1,400	
Gross revenue	$1,680,000	
Collection rate	82.00%	
Marginal net revenue		$1,377,600
Marginal costs		
Variable costs		
Units of volume	1,200	
Variable cost per unit	$300	
Marginal variable cost		$360,000

(*continued*)

Problem 11.5 (***continued***)

Fixed costs		
Salary costs	$600,000	
Fringe benefits	150,000	
Operating costs		
Rent		
Depreciation	140,000	
Marginal fixed cost		$890,000
Total marginal costs		$1,250,000
Marginal profit		$127,600

Collection Rate Calculation	**Share**	**Rate**	**Average**
Commercial	80.00%	90.00%	72.00%
Self-pay	20.00%	50.00%	10.00%
			82.00%

Problem 11.6

ICU admissions per month	60
ICU annualized admissions	720
Pharmaceutical cost per case	$1,600
Annualized pharmaceutical cost	$1,152,000
Potential savings	25.00%
Potential cost reduction	$288,000
Clinical pharmacist salary cost	$90,000
Fringe benefits rate	25.00%
Fringe benefits amount	$22,500
Total salary and fringe benefits	$112,500
Number of clinical pharmacists	2
Total clinical pharmacist cost	$225,000
Marginal cost improvement	$63,000

Problem 11.7

Marginal Revenue	**Year 1**		**Year 2**		**Year 3**		**Year 4**		**Year 5**	
Units of volume	800		1,000		1,250		1,563		1,953	
Price	$1,500		$1,500		$1,500		$1,500		$1,500	
Collection rate	75.00%		75.00%		75.00%		75.00%		75.00%	
Marginal net revenue		$900,000		$1,125,000		$1,406,250		$1,757,813		$2,197,266
Marginal costs										
Variable costs										
Units of volume	800		1,000		1,250		1,563		1,953	
Variable cost per unit	$400		$400		$400		$400		$400	
Marginal variable cost		$320,000		$400,000		$500,000		$625,000		$781,250
Fixed costs										
Salary costs	$500,000		$500,000		$500,000		$500,000		$500,000	
Fringe benefits	100,000		100,000		100,000		100,000		100,000	
Operating costs	96,000		96,000		96,000		96,000		96,000	
Rent	20,000		20,000		20,000		20,000		20,000	
Utilities										
Marginal fixed cost		$716,000		$716,000		$716,000		$716,000		$716,000
Total marginal costs		$1,036,000		$1,116,000		$1,216,000		$1,341,000		$1,497,250
Marginal profit		($136,000)		$9,000		$190,250		$416,813		$700,016
Accumulated profit margin		($136,000)		($127,000)		$63,250		$480,063		$1,180,078

Problem 11.8

Investment Present Value

	Construction	Equipment	Installation	Other	Total Investment	Present Value Factors	Investment Present Value
Year 0		$4,500,000	$450,000		$4,950,000	1.000	$4,950,000
Year 1							
Year 2							
Year 3							
Year 4							
Total		$4,500,000	$450,000		$4,950,000		$4,950,000

Benefit Present Value

	Revenue Increases	Revenue Decreases	Expense Decreases	Expense Increases	Total Benefit	Present Value Factors	Benefit Present Value
Year 1	$1,125,000		$312,000	$10,000	$1,427,000	0.930	$1,327,442
Year 2	1,350,000		312,000	10,000	1,652,000	0.865	1,429,529
Year 3	1,575,000		312,000	10,000	1,877,000	0.773	1,450,205
Year 4	1,650,000		312,000	10,000	1,952,000	0.690	1,346,564
Year 5	1,650,000		312,000	10,000	1,952,000	0.616	1,202,289
Year 6	1,650,000		312,000	10,000	1,952,000	0.550	1,073,472
Total	$7,350,000		$1,560,000	$50,000	$8,860,000		$6,756,028
					Net present value		$1,806,028
					Benefit:cost ratio		1.36
					Average payback period		3.35

Revenue increases

Year	Volume	Price	Collection Rate	Revenue Increase
1	150,000	$15.00	50%	$1,125,000
2	180,000	15.00	50%	1,350,000
3	210,000	15.00	50%	1,575,000
4	220,000	15.00	50%	1,650,000
5	220,000	15.00	50%	1,650,000
6	220,000	15.00	50%	1,650,000

Problem 11.9

Investment Present Value

	Construction	Equipment	Installation	Other	Total Investment	Present Value Factors	Investment Present Value
Year 0		$1,200,000	$180,000		$1,380,000	1.000	$1,380,000
Year 1							
Year 2							
Year 3							
Year 4							
Total		$1,200,000	$180,000		$1,380,000		$1,380,000

Benefit Present Value

	Revenue Increases	Revenue Decreases	Expense Decreases	Expense Increases	Total Benefit	Present Value Factors	Benefit Present Value
Year 1			$381,881	$12,000	$369,881	0.893	$330,251
Year 2			381,881	30,000	351,881	0.797	280,518
Year 3			381,881	30,000	351,881	0.712	250,462
Year 4			381,881	30,000	351,881	0.636	223,627
Year 5			381,881	30,000	351,881	0.567	199,667
Total			$1,909,406	$132,000	$1,777,406		$1,284,525
					Net present value		$(95,475)
					Benefit:cost ratio		0.931

Detailed Calculation of Expense Reduction		
Department Z	**Other Departments**	
1	3	Hours saved per shift
3	3	Shifts per day
3	9	Total hours saved per day
365	365	Days per year
1,095	3,285	Annual hours saved
$24.00	$17.00	Hourly pay rate
$26,280	$55,845	Savings per department
1	5	Departments involved
$26,280	$279,225	Total salary savings
	$305,505	Combined savings
	76,376	Fringe benefits at 25%
	$381,881	Total annual expense decrease

Problem 11.10

Average Collection Rate Category	Proportion	Collection Rate	Aggregate Rate
Commercial insurance	40.00%	89.50%	35.80%
Medicare	40.00%	80.00%	32.00%
Self-pay	20.00%	86.00%	17.20%
Total	100.00%		85.00%
Price charged per procedure			$25.00
Net revenue per procedure			$21.25
Fixed costs	$250,000		
Variable cost per unit	$20		

$$\text{Breakeven point} = \frac{\text{Fixed cost}}{\text{Net revenue per unit} - \text{variable cost per unit}}$$

$$\text{Breakeven point} = \frac{\$250{,}000}{\$1.25}$$

Breakeven point = 200,000

Capacity =

Tests per weekday	800
Weekdays	5
Tests per week	4,000
Available weeks/year	48
Total available capacity	192,000
Breakeven point	200,000
Demand for service	250,000
Capacity	192,000

Decision: Do not pursue — Insufficient capacity to achieve breakeven

Problem 11.11

Average collection rate	80%
Price charged per procedure	$1,100
Net revenue per procedure	$880
Fixed costs	$5,000,000
Variable cost per unit	480
Breakeven point =	Fixed cost / Net revenue per unit – variable cost per unit
Breakeven point =	$5,000,000 / $400.00
Breakeven point =	12,500
Breakeven point	12,500
Demand for service	8,000
Capacity	14,000
Decision: Do not pursue	Insufficient demand to achieve breakeven

Problem 11.12

Nurse practitioner visits per month	400
Annual visits	4,800
Charge per visit	$50.00
Gross charges	$240,000
Collection rate	75%
Net nurse practitioner revenue	$180,000
Nurse practitioner salary cost	$83,000
Fringe benefits at 25%	20,750
Total nurse practitioner cost	$103,750
Nurse practitioner profit or (loss)	$76,250

Problem 11.13

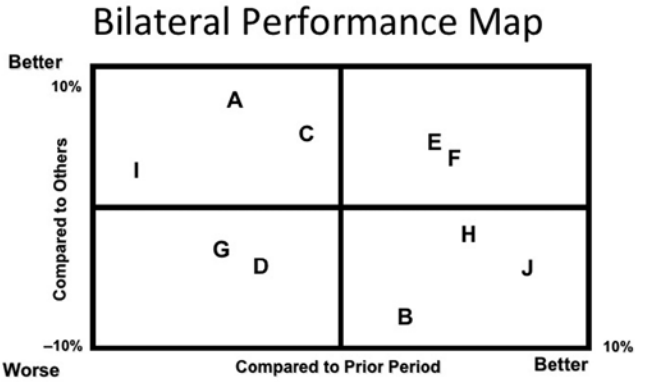
Incremental hip cases	50
Average revenue per hip case	$10,000
Incremental hip revenue	$500,000
Incremental hip cases	50
Marginal cost per hip	$4,500
Marginal total cost	$225,000
Incremental profit from hip cases	$275,000
Pursue the opportunity based on marginal analysis as shown here.	

Problem 11.14

	Total	Variable	Fixed
Supply item 1	$220,000		$220,000
Supply item 2	180,000		180,000
Supply item 3	75,000		75,000
Supply item 4	50,000		50,000
Supply item 5	25,000		25,000
Supply item 6	50,000		50,000
Supply item 7	500,000	$500,000	
Supply item 8	300,000	300,000	
Supply item 9	200,000	200,000	
	$1,600,000	$1,000,000	$600,000
Annual volume		10,000	
Variable cost per unit		$ 100.00	
Profit target		5.00	
Lowest acceptable price		105.00	

Problem 11.15

	Better or Worse Than Comparison Group	Better or Worse Compared to Prior Period	
Department A	8.00	–4.00	
Department B	–7.50	2.50	
Department C	6.00	–1.00	
Department D	–5.50	–3.50	First group = worse in both comparisons
Department E	5.00	4.00	Last group = better on both comparisons
Department F	4.00	5.00	Last group = better on both comparisons
Department G	–3.50	–5.50	First group = worse in both comparisons
Department H	–1.00	6.00	
Department I	2.50	–7.50	
Department J	–4.00	8.00	



Problem 12.1

	A	B	C	D	E
Salaries	$150	$125	$300	$200	$100
Supplies	50	25	150	100	50
Purchased services	250	100	50		50
Total	$450	$250	$500	$300	$200
Possible relative value unit schemes					
Base of 200	2.2500	1.2500	2.5000	1.5000	1.0000
Base of 250	1.8000	1.0000	2.0000	1.2000	0.8000
Base of 300	1.5000	*0.8333*	*1.6667*	1.0000	*0.6667*
Base of 400	1.1250	0.6250	1.2500	0.7500	0.5000
Base of 500	0.9000	0.5000	1.0000	0.6000	0.4000

Do not use Scheme based on 300 (shown in italics) since it produces an irrational number—one that never rounds off to a "crisp" number after two or four decimal places.

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APPENDIX 4

Formulary

Current Ratio = Total Current Assets ÷ Total Current Liabilities

Quick Ratio = (Total Current Assets – Inventory) ÷ Total Current Liabilities

$$\text{Days of Cash on Hand} = \frac{\text{Cash and Marketable Securities}}{(\text{Annual Operating Expenses} - \text{Depreciation}) \div 365}$$

$$\text{Average Age of Accounts Receivable} = \frac{\text{Net Accounts Receivable}}{\text{Average Daily Net Revenue}}$$

Accounts Receivable Turnover = 365 ÷ Average Age of Accounts Receivable

Average Inventory Value = Opening Inventory Value + Ending Inventory Value ÷ 2

Inventory Turnover = Annual Inventory Purchases ÷ Average Inventory Value

Average Age of Inventory = 365 ÷ Inventory Turnover

$$\text{Average Age of Accounts Payable} = \frac{\text{Accounts Payable Balance}}{\text{Annual Credit Purchases} \div 365}$$

Average Age of Physical Plant = Accumulated Depreciation ÷ Annual Depreciation Expense

Straight-Line Depreciation = (Cost of the Asset – Salvage Value) ÷ Asset Life

Sum of the Years' Digits Depreciation = (Years of Asset Life Remaining ÷ Sum of the Years' Digits) × (Cost of the Asset – Salvage Value)

Double Declining Balance Depreciation = ((1 ÷ Life in Years) × 2) × (Cost – Accumulated Depreciation)

Units-of-Production Depreciation = (Number of Units Produced in the Current Year ÷ Total Number of Units to Be Produced over the Asset's Life) × (Cost of the Asset – Salvage Value)

Return on Investment (ROI) = Profit ÷ Average Asset Value

Average Asset Value = Asset Acquisition Cost ÷ 2

Operating Margin Ratio = Operating Profit ÷ Total Operating Revenue

Collection Rate = Net Revenue ÷ Gross Revenue

Usage Variance = (Actual Volume – Adjusted Budget Volume) × Actual Price

Price Variance = (Actual Price – Budget Price) × Volume-Adjusted Budget Volume

Labor Rate Variance = ([Budget Labor Rate – Actual Rate] × Volume-Adjusted Budgeted Hours)

Efficiency Variance = ([Volume-Adjusted Budgeted Hours – Actual Hours] × Actual Labor Rate)

Volume Adjustment Factor = Variable Expense Factor × Volume Change Factor

Volume Change Factor = (Actual Volume – Budget Volume) ÷ Budget Volume

$$\text{Breakeven Point} = \frac{\text{Fixed Costs}}{\left(\text{Net Revenue per Unit} - \text{Variable Cost per Unit}\right)}$$

Benefit/Cost Ratio = Present Value of Cash Inflows ÷ Present Value of Investment

Net Present Value = Present Value of Cash Inflows – Present Value of Investment

Average Payback Period = Net Investment ÷ Average Annual Cash Inflows

Average Daily Census = Patient Days for the Period ÷ Calendar Days in the Period

Average Length of Stay = Total Patient Days ÷ Total Cases (Admissions or Discharges)

Occupancy Rate = Average Daily Census ÷ Beds

Bed Days = Available Days × Calendar Days

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APPENDIX 5

Present Value Table

THE VALUE OF $1.00 RECEIVED IN A FUTURE YEAR

Year	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239

(*continued*)

Year	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149
21	0.811	0.660	0.538	0.439	0.359	0.294	0.242	0.199	0.164	0.135
22	0.803	0.647	0.522	0.422	0.342	0.278	0.226	0.184	0.150	0.123
23	0.795	0.634	0.507	0.406	0.326	0.262	0.211	0.170	0.138	0.112
24	0.788	0.622	0.492	0.390	0.310	0.247	0.197	0.158	0.126	0.102
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092

Year	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026

Year	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
21	0.112	0.093	0.077	0.064	0.053	0.044	0.037	0.031	0.026	0.022
22	0.101	0.083	0.068	0.056	0.046	0.038	0.032	0.026	0.022	0.018
23	0.091	0.074	0.060	0.049	0.040	0.033	0.027	0.022	0.018	0.015
24	0.082	0.066	0.053	0.043	0.035	0.028	0.023	0.019	0.015	0.013
25	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010

Year	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769
2	0.683	0.672	0.661	0.650	0.640	0.630	0.620	0.610	0.601	0.592
3	0.564	0.551	0.537	0.524	0.512	0.500	0.488	0.477	0.466	0.455
4	0.467	0.451	0.437	0.423	0.410	0.397	0.384	0.373	0.361	0.350
5	0.386	0.370	0.355	0.341	0.328	0.315	0.303	0.291	0.280	0.269
6	0.319	0.303	0.289	0.275	0.262	0.250	0.238	0.227	0.217	0.207
7	0.263	0.249	0.235	0.222	0.210	0.198	0.188	0.178	0.168	0.159
8	0.218	0.204	0.191	0.179	0.168	0.157	0.148	0.139	0.130	0.123
9	0.180	0.167	0.155	0.144	0.134	0.125	0.116	0.108	0.101	0.094
10	0.149	0.137	0.126	0.116	0.107	0.099	0.092	0.085	0.078	0.073
11	0.123	0.112	0.103	0.094	0.086	0.079	0.072	0.066	0.061	0.056
12	0.102	0.092	0.083	0.076	0.069	0.062	0.057	0.052	0.047	0.043
13	0.084	0.075	0.068	0.061	0.055	0.050	0.045	0.040	0.037	0.033
14	0.069	0.062	0.055	0.049	0.044	0.039	0.035	0.032	0.028	0.025
15	0.057	0.051	0.045	0.040	0.035	0.031	0.028	0.025	0.022	0.020
16	0.047	0.042	0.036	0.032	0.028	0.025	0.022	0.019	0.017	0.015
17	0.039	0.034	0.030	0.026	0.023	0.020	0.017	0.015	0.013	0.012
18	0.032	0.028	0.024	0.021	0.018	0.016	0.014	0.012	0.010	0.009
19	0.027	0.023	0.020	0.017	0.014	0.012	0.011	0.009	0.008	0.007
20	0.022	0.019	0.016	0.014	0.012	0.010	0.008	0.007	0.006	0.005
21	0.018	0.015	0.013	0.011	0.009	0.008	0.007	0.006	0.005	0.004
22	0.015	0.013	0.011	0.009	0.007	0.006	0.005	0.004	0.004	0.003
23	0.012	0.010	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.002
24	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002
25	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.001

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APPENDIX 6

Glossary

Accountable Care Organization (ACO). An organization of like-minded providers working to provide efficient and high-quality care for an assigned population of patients. Payment models vary, but the concept generally is that the providers may receive a financial reward for improving cost and quality performance for the defined population when compared to historical experience.

Accrual basis. The basis on which accountants typically record the revenues and expenses of a business. Revenue is recognized at the time it is earned and expenses at the time they are incurred. The actual cash flow (in for revenue and out for expenses) may not occur until a later date.

Average profit. The profit associated with a typical unit of business. It is calculated by dividing total profit by the amount of business volume expressed in units of service.

Benefits/cost ratio. Sometimes called a profitability index. This ratio is used to evaluate capital expenditure proposals. Is obtained by dividing the present value of cash inflows by the present value of the investment in the project. If the ratio is equal to or greater than one, a project is acceptable. If the ratio is less than one, the project should be rejected.

Breakeven point. The amount of business volume that results in the revenue exactly equaling the cost of the service.

Capital budgeting. The total process of requesting, evaluating, and selecting capital expenditures for acquisition.

Capital expenditure. An outlay made for the purchase of a fixed asset (plant, equipment, etc.) that will benefit a period of time greater than one year.

Case mix. The makeup, by diagnosis, of a health program's caseload. The case mix directly influences length of stay, intensity, cost, and scope of services provided by hospital or other health care program.

Cash basis. The basis on which expenses are recognized when they are paid and revenues when the cash is received.

Cash budget. A plan for the cash flow (cash receipts and disbursements) expected by an organization during the coming budget year. It is a short-term financial planning tool that is generally prepared on a month-by-month basis. By determining the net cash flow for each month and taking into account the opening cash balance, the organization can determine when borrowing will be required and when surplus cash will be available for investment.

Cash flow. The actual cash receipts and disbursements of the organization.

Certificate of Need (CON). Certification issued by a governmental body to an individual or organization proposing to construct, expand, or modify a health facility or offer a new or different health service usually involving more than a minimum capital expenditure or involving a change in bed capacity. The issuance of such certification recognizes that the facility or service is needed by those for whom it is intended. It is a condition of licensure of the facility or service and is intended to avoid unnecessary duplication of facilities and services.

Coinsurance. A cost-sharing requirement that requires an insurance purchaser to assume a portion or percentage of the cost of covered services.

Commercial paper. Short-term, unsecured promissory notes issued by corporations that have a high credit rating. The maturity ranges up to 270 days, and the yield is often higher than that of other marketable securities.

Copayment. A type of cost-sharing in which the insured pays a specific flat amount per unit of service and the insurer pays the rest of the cost.

Cost center. An accounting methodology whereby all costs attributed to a particular activity, department, or program within an organization (e.g., a hospital's chemistry lab, a social services department) are aggregated for accounting or reimbursement purposes.

Cost-sharing. Provisions of a health insurance policy that requires the insured individual to pay some portion of his or her covered medical expenses. Deductibles, coinsurance, and copayments are all forms of cost-sharing.

Cost shifting. The transfer of cost from one payer to others because the initial payer does not cover all the cost of providing the services.

Cross-subsidization. The practice of allocating at least a portion of the higher cost associated with the provision of a particular health service or with a particular cost center in the overall financial operation of a health care facility to other services or cost centers that are usually less costly. Cross-subsidization is normally accomplished through an adjustment of the charge rates for each service.

Current ratio. A measure of liquidity calculated by dividing current assets by current liabilities. The higher the ratio, the greater the organization's liquidity.

Debt service. The total amount loan principal and interest that must be repaid.

Deductible. The amount of expense that must be incurred by an insured individual before the insurer pays benefits.

Discount rate. The rate at which a series of future cash flows are adjusted in order to determine their present value. It is sometimes referred to as the opportunity cost of capital (funds) in capital budgeting.

Endowment funds. Those funds restricted by their donors to income-producing investments, only the income from which may be spent.

Expenditure. Not to be confused with an expense, an expenditure is an outlay of cash for any purpose: payroll, investments, equipment acquisition, debt retirement, and so on.

First dollar coverage. Coverage that begins with the first dollar of health expenses incurred by an insured individual for covered services. Such coverage, therefore, has no deductibles, although it may have copayments or coinsurance.

Fiscal year (FY). Any 12-month period for which annual accounts are kept. The name of the fiscal year is determined by the year in which it ends. For example, fiscal year 2017 ends some time during 2017. A fiscal year ending on June 30, 2018, would be called fiscal year 2018.

Fixed costs. Costs that are a function of time rather than the level of activity. Such costs do not rise or fall in concert with business volume.

Healthcare Financing Administration (HCFA). Federal agency within the department of Health and Human Services responsible for administering Medicare, Medicaid, and other governmental health programs.

Health Maintenance Organization (HMO). An entity with four essential attributes: (1) an organized system for providing health care in a geographic area, which accepts the responsibility to provide or otherwise ensure the delivery of (2) an agreed-upon set of basic and supplemental health maintenance and treatment services to (3) a voluntarily enrolled group of persons and (4) to be reimbursed for services through a predetermined, fixed, periodic payment made by or on behalf of each person or family unit enrolled in the HMO without regard for the amount of actual services provided.

Hill-Burton. Legislation and its programs for federal support of construction and modernization of hospitals and other health care facilities, beginning with public law 70-725, the hospital Survey and Construction Act of 1946. This law, as amended, provided for surveying state needs, developing plans for construction of hospitals and public health centers, and assisting in constructing and equipping them. The program expanded in dollars and scope until the late 1960s. Hospitals that have received Hill-Burton funding must provide a specific level of free care to their patients.

Incentive reimbursement. A scheme that provides payment for a health service rendered, generally by an institution and that provides added financial rewards if certain conditions are met. It is intended to promote and reward increased efficiency, cost containment, improved quality, reduced utilization, and the like.

Indirect cost. A cost that cannot be identified directly with a particular activity, service, or product of the organization experiencing the cost. Examples include such costs as maintenance and accounting, as well as other non-revenue-producing departments. Indirect costs usually are allocated to patient care areas on the basis of some statistical factor. These costs are also referred to as overhead costs.

Internal rate of return (IRR). A sophisticated way of evaluating capital expenditure proposals. It is the discount rate that causes the net present value of the project to equal zero. Thus, if a project's internal rate of return is greater than the cost of capital (the funds being used to make the investment), the project is acceptable; otherwise, it is rejected.

Liquidity. The ability to pay bills as they come due. This is directly related to the level of cash and securities owned by the organization.

Marginal profit. The profit associated with the next unit or units of business—the incremental or marginal volume. It is used for decision making. It is calculated subtracting the costs associated with the incremental volume from the revenue associated with that volume.

Medicaid. Federal/state programs established under Title XIX of the Social Security Act that finance payments to providers of health care services for low-income persons eligible under the law. Subject to broad financial guidelines, states determine the benefits, program eligibility, rates of payment for providers, and methods of administering the program. It is often referred to as medical assistance.

Medicare. A nationwide federal health insurance program, established under Title XVIII of the Social Security Act for persons aged 65 and over, for persons eligible for Social Security disability payments, and for certain persons who need kidney dialysis or transplantation. Medicare Part A pays for hospital care, Part B pays for physician services, and Part D provides drug coverage.

Net present value. The most common of the sophisticated tools for evaluating capital expenditure proposal. It is calculated by subtracting the present value of the investment required by a project from the present value of the projected cash inflows. If the net present value is greater than zero, the project should be accepted; otherwise, it should be rejected.

Non-revenue-producing centers. Support or overhead units such as dietary and medical records that provide necessary services to other departments but generate no patient revenues themselves.

Overhead. The costs that cannot be identified directly with a particular activity, service, or product of the organization experiencing the cost.

Examples include such costs as maintenance and accounting, as well as other non-revenue-producing departments. Indirect costs usually are allocated to patient care areas on the basis of some statistical factor. These costs are also referred to as indirect costs.

Overhead allocation. In preparing financial statements, rate requests, and other reports, it is necessary to assign overhead expenses to patient care areas on the basis of some statistical factors (labor hours, square feet, etc.). This assignment is called the allocation.

PEST analysis. An analysis that examines the impact on an organization associated with political, economic, social, and technological factors.

Present value. The value of the future sum or a stream of dollars discounted at a specific rate. The process of finding the present value is the reverse of the compound earnings process.

Profit. The difference between revenue and expense.

Quick ratio. A measure of liquidity calculated by dividing an organization's current assets minus its inventory by its current liabilities. The higher the ratio, the better.

Reimbursement. The process by which health care providers receive payments for their services. Because of the nature of the health care environment, providers are often reimbursed by third parties who, for the most part, represent their patients.

Restricted funds. Funds such as gifts and endowments that are limited to specific uses by donors.

Revenue bond. A debt instrument repayable solely from the revenue generated from the operation of the project being financed.

Revenue-producing center. Departments providing direct services to patients (e.g., laboratory and imaging services) and thus generating revenue.

Semi-variable costs. Costs that are fixed over a certain range of volume and change to a different level beyond that volume. Sometimes these are referred to as step costs because of the way they appear when graphed.

SWOT analysis. An analysis that considers the Strengths and Weaknesses of an organization along with the Opportunities and Threats posed by the environment or competitors.

Third-party payer. Any public or private organization that pays for specific health or medical expenses on behalf of beneficiaries or recipients (e.g., Blue Cross and Medicare). The individual (first party) generally pays a premium for such coverage. The organization (third party) then pays bills from the providers (second party) on behalf of the insured. Such payments are referred to as third-party payments.

Unrestricted funds. Monies that have no donor-imposed restrictions and can be used for any legitimate purpose.

Variable cost. Costs that vary directly with the level of activity. They are a function of volume, not time.

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APPENDIX 7

Major Diagnostic Categories

MDC	Description
01	Nervous System Diseases and Disorders
02	Eye Diseases and Disorders
03	Ear, Nose, Mouth, and Throat Diseases and Disorders
04	Respiratory System Diseases and Disorders
05	Circulatory System Diseases and Disorders
06	Digestive System Diseases and Disorders
07	Hepatobiliary System and Pancreas Diseases and Disorders
08	Musculoskeletal System and Connective Tissue Diseases and Disorders
09	Skin, Subcutaneous Tissue, and Breast Diseases and Disorders
10	Endocrine, Nutritional, and Metabolic Diseases and Disorders
11	Kidney and Urinary Tract Diseases and Disorders
12	Male Reproductive System Diseases and Disorders
13	Female Reproductive System Diseases and Disorders
14	Pregnancy, Childbirth, and the Puerperium
15	Newborns and Neonate Conditions Began in Perinatal Period
16	Blood, Blood-Forming Organs, Immunological Diseases and Disorders
17	Myeloproliferative Diseases and Poorly Differentiated Neoplasms
18	Infectious and Parasitic Diseases
19	Mental Diseases and Disorders
20	Alcohol-Drug Use and Alcohol-Drug-Induced Organic Mental Diseases

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MDC	Description
21	Injuries, Poisonings, and Toxic Effects of Drugs
22	Burns
23	Factors on Health Status and Other Contacts with Health Services
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Source: Centers for Medicare and Medicaid Services.

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About the Author

William J. Ward, Jr., MBA, is associate professor of health finance and management at the Johns Hopkins Bloomberg School of Public Health, associate professor of nursing at the Johns Hopkins School of Nursing, and the former director of the Master of Health Administration Degree Program.

Ward is a guest lecturer at Singapore Management University, where he teaches in its week-long J&J-sponsored hospital management program. For over 20 years, he taught financial management at the University of Maryland's School of Nursing and continues to guest lecture there.

Prior to his 20-year-long academic career, Ward held operational and financial executive positions in health care, most recently as chief operating officer of what is now the Johns Hopkins Bayview Medical Center. Since leaving Bayview, he has provided a variety of consultative services throughout the United States and has worked on projects overseas in the Caribbean, Latin America, Asia, and the Middle East. He serves on the boards of several health systems in the United States and the United Arab Emirates. Professional affiliations include the Healthcare Financial Management Association and the American College of Healthcare Executives. Ward has authored numerous articles on a variety of health care operational, financial, and quality topics and is a frequent speaker on these same topics. This is his third textbook.