LEARNING OBJECTIVES

After studying this chapter, readers should be able to:

- Discuss, both in qualitative and quantitative terms, the incentives and risks inherent in capitation reimbursement.
- Describe how premium rates are developed.
- Explain the risk-sharing process, including its goals and implementation problems.

INTRODUCTION

Thus far, we have focused primarily on operating in a fee-for-service environment. In such an environment, each inpatient hospital stay and each outpatient visit will generate additional revenue. The basis for payment may be charges, discounted charges, prospective payment, per diem, or some other methodology, but the key feature of fee-for-service reimbursement is that higher patient volume leads to increased revenues. Also, in most fee-for-service payment methodologies, the greater the intensity of service provided, and hence the higher the costs, the greater the reimbursement amount.

Under capitation, providers receive a fixed fee for each member (patient) enrolled, regardless of the amount or intensity of services provided. Clearly, capitation represents a reimbursement methodology that requires a different approach to financial management decision making than that used under conventional reimbursement. The basic cornerstones of finance, such as discounted cash flow analysis, risk and return, and opportunity costs, remain unchanged, but the manner in which these concepts are applied must recognize the unique features of capitation.

In this chapter, we first present some background information about capitation and discuss the mechanics of capitation and its implications for healthcare financial management. Then we present some
techniques for setting rates on capitation contracts. Finally, we present some information on risk sharing among provider components within integrated delivery systems.

AN OVERVIEW OF CAPITATION

Formally defined, capitation is a flat periodic payment per enrollee to a healthcare provider; it is the sole reimbursement for providing services to a defined population. The word "capitation" is derived from the term "per capita," which means per person. Generally, capitation payments are expressed as some dollar amount per member per month (PMPM), where the word "member" typically means enrollee in some managed care plan, which is usually a health maintenance organization (HMO). For example, a primary care physician may receive a capitated payment of $15 PMPM for attending to the healthcare needs of 250 members of BetterCare, a regional HMO. Under this contract, the physician receives $15 \times 250 \times 12 = $45,000 in total capitation payments over the year, and this amount must cover all of the primary care services offered to the patient population specified in the contract. Usually, capitated payments are adjusted for age and gender, but no other adjustments typically are made.

In a fee-for-service (FFS) system, the financial risk of providing healthcare services is borne primarily by purchasers and insurers. Hospitals, physicians, and other providers bear negligible risk because they are paid on the basis of services provided. Insurers bear short-term risk in that in any year, payments to providers can exceed the amount of premiums collected. However, poor profitability by insurers in one year usually can be offset by price increases to purchasers the next year, so the long-term risk of financing the healthcare system is borne by purchasers.

Under capitation, fixed payments are made to providers regardless of the volume of services rendered, so risk sharing occurs among all three parties. Providers bear the short-term risk that the costs of providing service, including opportunity costs (profits), might exceed the capitation payment. Insurers/networks bear a longer-term risk, in that provider costs can increase when contracts are renewed, but purchasers still bear the ultimate risk of having to support the cost of the healthcare system.
Self-Test Questions

1. What is capitation?

2. What are the primary differences between a conventional payment system and capitation?

PROVIDER INCENTIVES UNDER CAPITATION

Capitation has a dramatic impact on provider incentives, and hence on provider behavior. Consider Figures 5.3 and 5.5 in the textbook, which depict revenues and costs to Atlanta Clinic under fee-for-service and capitation. Regardless of the payment system, total costs (TC), which are merely the sum of fixed costs (FC) and variable costs (VC), are tied directly to volume, so the greater the volume of services delivered, the greater the amount of total costs. The difference between the two figures is the total revenues line, and how profits and losses are realized. Under fee-for-service (Figure 5.3), the revenues line is upward sloping, and it starts at the origin. At zero volume, the provider receives zero revenue, but at any positive volume, the greater the volume, the higher the revenue. Under capitation (Figure 5.5), assuming a fixed number of enrollees, total revenues are fixed independently of volume, and hence the revenue line is horizontal. On each graph, breakeven occurs when total revenues equal total costs.

Although the graphs are somewhat similar in general appearance, there is a profound difference in how profits and losses occur. First, consider fee-for-service. All volumes to the left of breakeven produce a loss for the provider, while all volumes to the right of breakeven produce a profit. Thus, the incentive for providers is to increase utilization because increased volume leads to increased profits. Now, look at the capitation graph. Here, all volumes to the left of breakeven produce a profit, whereas all volumes to the right of breakeven result in a loss. Under capitation, providers have the incentive to decrease utilization because decreased volume leads to increased profits. The only way to increase revenues is to increase the number of covered lives (enrollees).

Capitation completely reverses the actions that providers must take to ensure financial success, and
many providers find it difficult to adjust to the new, perverse (by conventional reimbursement standards) incentive system. Under fee-for-service, the keys to success are to work harder, increase volume, and hence increase profits; under capitation, the keys to profitability are to work smarter and decrease volume. Because the primary means to profitability with fee-for-service are increased volume, increased reimbursement rates, or both, the primary task of managers is to maximize utilization and reimbursement rates. Furthermore, any deficiencies in cost control often can be overcome by higher volume. Under capitation, the primary path to profitability is through cost control, so the key to success is lower volume and cost-effective treatment plans.

In general, capitation motivates providers to provide only needed services, and to provide those services in the lowest cost setting. Has capitation influenced provider behavior? It is difficult to fully assess the impact of capitation because few providers are fully capitated. Indeed, capitation is used most widely for primary care physicians, less so for specialists, and even less for hospitals. Furthermore, there is recent evidence that the whole concept of managed care is losing popularity and that the plans that remain are cutting back on their use of capitation. Still, even relatively limited use of capitation, coupled with aggressive utilization management, can influence an entire market because it sets the standard for low-cost services.

Although much has been written about the negative aspects of capitation, particularly the incentive to withhold needed services, it must also be recognized that there are positive aspects to capitation. Here are some potential benefits associated with capitation:

- Providers receive a fixed payment regardless of whether services are actually rendered. Capitation revenues are predictable and timely, and thus are less risky than revenues from conventional payment methodologies that are tied to volume.
- Capitation payments are received before services are rendered, so, in effect, payers are extending credit to providers rather than vice versa, as under conventional reimbursement.
- Capitation supports national healthcare goals—primarily increased emphasis on cost control as well as wellness and prevention.
• Capitation may ease the reimbursement paperwork burden, and hence reduce expenditures on administrative costs.
• Capitation aligns the economic interests of physicians and hospitals because risk-sharing systems are typically established that allow all providers in a capitated system to benefit from reducing costs.
• Similarly, capitation encourages utilization of lower-cost treatments, such as outpatient surgery and home health care, as opposed to higher-cost inpatient alternatives. Thus, capitation creates incentives to use those services that are typically preferred by patients when such alternatives are clinically appropriate.

Self-Test Questions
1. What are the differences in provider incentives under conventional reimbursement and capitation?
2. What are the advantages of a capitated payment system?

FINANCIAL RISK UNDER CAPITATION

One of the key issues facing providers under capitation is its impact on financial risk. To examine this issue, we will first present a descriptive picture of financial risk, then examine the nature of financial risk, and finally present the results of an analysis that examines the financial risk inherent in capitation contracts.

Descriptive Risk

One way to assess the risk inherent in capitation versus other reimbursement contracts is to describe the nature of the risks incurred. Charge-based reimbursement is the least risky because the only risk facing providers is the risk that volume will be too low to cover fixed costs, assuming that the charge is set high enough to cover variable costs. Note that regardless of the reimbursement method, providers bear the cost of service risk in that costs can exceed revenues. However, a primary difference among the reimbursement types is the ability of the provider to influence the revenue/cost ratio. If providers set fees for each type of
service provided, they can most easily ensure that revenues exceed costs. Furthermore, if providers have the power to set rates above those that would exist in a truly competitive market, charge-based reimbursement becomes even less risky. Finally, providers can increase usage by churning—creating more visits, ordering more tests, extending inpatient stays, and so on—which, in turn, increases revenues and reduces risks. Discounted charges may lower the profit potential of providers, but it does not alter the risks borne by providers.

*Prospective payment*, in which a fixed payment is made on the basis of each patient's diagnosis or procedure, adds a second dimension of risk to reimbursement contracts because the bundle of services needed to treat a particular diagnosis or the services provided for a particular procedure may be more costly than that assumed in the payment. If, on average, patients require more intensive services and, for hospitals, a longer length of stay than assumed in the prospective payment amount, the provider must bear the added costs.

*Per diem* reimbursement, whereby providers are paid a preset amount per patient day, is often used for hospitals and long-term care facilities. In addition to a single, all-inclusive per diem rate, *stratified per diems* are sometimes used whereby different rates are paid for dissimilar categories of care, such as general acute inpatient, obstetrical, and intensive care. Even under stratified per diems, where one rate usually covers a large number of diagnoses, providers bear case-mix risk along with intensity risk. In addition, providers bear the risk that the payer, through utilization reviews, will constrain lengths of stay, and hence increase intensity during the days that a patient is hospitalized. Thus, under per diem, the "compression" of services and shortened lengths of stay can put significant pressure on providers' profitability.

*Under global pricing*, payers pay a single prospective payment that covers all services delivered in a single episode, whether the services are rendered by a single or by multiple providers. For example, a global fee may be set for all obstetric services associated with a pregnancy provided by a single physician, including all prenatal and postnatal visits, as well as the delivery itself. Or a global price may be paid for all
physician and hospital services associated with a cardiac bypass operation.

From a payer's perspective, global pricing eliminates the potential for problems associated with unbundling and upcoding. *Unbundling* involves pricing the individual components of a service separately rather than as a package. For example, a physician's treatment of a fracture could be bundled, and hence billed as one episode, or it could be unbundled, with separate bills submitted for diagnosis, x-rays, setting the fracture, removing the cast, and so on. The rationale for unbundling usually is to provide more detailed records of treatments rendered, but often the result is higher total charges for the parts than would be charged for the entire package. *Upcoding* is the practice of billing for a procedure that yields a higher prospective payment than the one actually performed. Clearly, the more services that must be rendered for a single payment, the more providers are at risk for intensity of services.

Finally, under *capitation*, providers receive a fixed payment per member per month to provide all covered services to some defined population. Now, providers assume utilization and actuarial risks along with the risks assumed under the other reimbursement methods.

When the risks under different reimbursement systems are outlined in this descriptive fashion, it is easy to jump to the conclusion that capitation is by far the riskiest to providers, while charge-based reimbursement is the least risky. However, before finalizing our conclusions regarding the risk to providers under capitation contracts, we need to examine the issue a little closer. We begin our more detailed examination with a discussion of the nature of financial risk.

**The Nature of Financial Risk**

As we discussed in Chapters 10 and 15, financial risk stems from uncertainties inherent in expected cash flows. If all forecasted cash flows were known with certainty, there would be no financial risk. However, because of uncertainties, there is some probability that a reimbursement contract will be less profitable than expected, and the greater the probability of a realized profitability far below that expected, the greater the financial risk.
Financial risk can be classified along several dimensions, but two dimensions are of particular relevance to our discussion of financial risk under capitation: (1) objective risk and (2) subjective risk. *Objective risk* occurs when the risk inherent in an uncertain outcome is known. For example, the flip of a coin has only objective risk. It is uncertain whether the flip will result in a head or a tail, so the flip is risky, but the probability of flipping a head or tail, 50 percent, is known. *Subjective risk* occurs when the probability distribution itself is uncertain. For example, a particular weather forecaster may predict that the chance of rain is 20 percent, but different forecasters may attach different probabilities to the event. Here, there are two dimensions to risk: (1) the risk inherent in the probability distribution (20 percent rain/80 percent no rain) and (2) the risk that the probability distribution itself (the weather forecast) is wrong.

We will see that the objective financial risk inherent in capitation contracts is not as high as many people suspect. However, their subjective financial risk is often very high, so the overall impact of capitation on the financial risk of most providers is much higher than indicated by an objective risk analysis because, by definition, subjective risk cannot be measured.

It is important to make one other point concerning financial risk. Under most types of reimbursement, rates can be set too low to cover costs. In such contracts, providers will lose money, but they do not necessarily bear a great deal of financial risk as defined here because such risk is a function of uncertainty, not profitability. If you loan $1,000 to your brother-in-law with every expectation that the loan will never be repaid, the loan is not very risky at all, even though its expected rate of return is –100 percent. Similarly, a hospital's reimbursement contract with a certain loss of, say, $100,000, has no financial risk because there is no uncertainty regarding the contract's profitability. The point here is that many payers that offer capitated contracts have a great deal of bargaining power that can be used to negotiate very tough terms with providers. These tough terms, and the resulting potential for losses on the contract, are not a result of the financial risk inherent in capitation contracts, but rather a result of the negotiating power of the payer. That same payer could negotiate a low-profitability contract regardless of the reimbursement method specified.
A Quantitative Analysis

The financial risk associated with provider contracts stems from uncertainty in profitability, so both revenues and costs must be considered. We will use hospitals to analyze the financial risk inherent in prospective payment and capitation contracts, but the results apply to physicians and other healthcare providers.²

Under prospective payment, there is significant revenue risk because the amount of reimbursement depends on the number of admissions, with lower volume yielding reduced revenues. However, under capitation, and assuming a fixed number of enrollees, there is virtually no revenue risk. The hospital will receive the contractually fixed amount per member per month regardless of patient volume.

On the cost side, the financial risks are identical under the two contracts. There are fixed costs inherent in providing the service that must be met regardless of volume, and variable costs that are incurred for each patient admission. Thus, total costs, the sum of fixed and variable components, are dependent on volume. If we assume, at least initially, that the number and nature of admissions are unaffected by the reimbursement contract, then realized total costs are the same for a given utilization amount whether the payment method is prospective payment or capitation.

The financial risk facing hospitals is tied to uncertainty in profitability, and hence stems from both uncertainties in the revenue stream and uncertainties in total costs. To examine the impact of these uncertainties, we will consider two hospitals: (1) Hospital F, whose costs are all fixed, and (2) Hospital V, whose costs are all variable. Clearly, no real-world hospital has all fixed or all variable costs, but by looking at these extremes we can gain a better appreciation of the factors that influence financial risk under prospective payment and capitation.

To keep the analysis manageable, assume a hypothetical situation in which the contract involves 1,000 members; the annual capitation payment is $300 per member per year (PMPY); the expected number of inpatient stays is 0.1 PMPY, or 100 admissions per year; and the prospective payment per admission is $3,000. On the cost side, assume Hospital F has fixed costs of $300,000 and no variable costs, to treat the
population served; while Hospital V has variable costs of $3,000 per inpatient stay and no fixed costs.

Table 20.1 contains the annual cash flows to each hospital associated with the two contracts. The initial values were chosen so that the revenues are the same under each contract type and total costs are the same at both hospitals. For ease, the values were chosen so that net income under both contracts is zero.

<table>
<thead>
<tr>
<th></th>
<th>Hospital F</th>
<th>Hospital V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prospective</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payment</td>
<td>$300,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Capitation</td>
<td>$300,000</td>
<td>$300,000</td>
</tr>
<tr>
<td><strong>Fixed costs</strong></td>
<td>300,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Variable costs</strong></td>
<td>0</td>
<td>300,000</td>
</tr>
<tr>
<td><strong>Net income</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

Now, let's introduce risk into the analysis. Again, to keep the example manageable, assume that the only uncertainty in the contracts is patient volume; that is, the capitation payment, prospective payment per admission, fixed costs, and variable costs per inpatient stay are known with certainty at the beginning of the year (beginning of the contract period). What would happen to profitability if realized volume differed from expected volume? Table 20.2 answers this question.
<table>
<thead>
<tr>
<th>Number of Inpatient Stays</th>
<th>Hospital F Prospective Payment</th>
<th>Hospital F Capitation</th>
<th>Hospital V Prospective Payment</th>
<th>Hospital V Capitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($60,000)</td>
<td>$0</td>
<td>$0</td>
<td>$60,000</td>
</tr>
<tr>
<td>80</td>
<td>($45,000)</td>
<td>0</td>
<td>0</td>
<td>45,000</td>
</tr>
<tr>
<td>85</td>
<td>(30,000)</td>
<td>0</td>
<td>0</td>
<td>30,000</td>
</tr>
<tr>
<td>90</td>
<td>(15,000)</td>
<td>0</td>
<td>0</td>
<td>15,000</td>
</tr>
<tr>
<td>95</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>105</td>
<td>15,000</td>
<td>0</td>
<td>0</td>
<td>(15,000)</td>
</tr>
<tr>
<td>110</td>
<td>30,000</td>
<td>0</td>
<td>0</td>
<td>(30,000)</td>
</tr>
<tr>
<td>115</td>
<td>45,000</td>
<td>0</td>
<td>0</td>
<td>(45,000)</td>
</tr>
<tr>
<td>120</td>
<td>60,000</td>
<td>0</td>
<td>0</td>
<td>(60,000)</td>
</tr>
</tbody>
</table>

Uncertain volume has no effect on Hospital F under capitation or on Hospital V under prospective payment. In each instance, revenues and costs move in step with one another. Hospital F has all fixed costs, and under capitation its revenues are fixed, so changes in volume have no impact on profitability. Under prospective payment, revenues vary with volume, while costs are fixed, so higher volume leads to higher profitability. Thus, with prospective payment contracts, Hospital F has a financial incentive to increase volume because increased volume leads to higher profits.

The situation is reversed at Hospital V. When all costs are variable, profits are constant under prospective payment but variable under capitation. Increased volume leads to increased revenue under prospective payment, but the revenue increase is offset exactly by higher costs. Hospital V receives $3,000 for each admission, but its variable costs also equal $3,000 per admission, so additional admissions add nothing to the bottom line. Lower volume means lower costs regardless of the reimbursement method, but under capitation, the revenue stream is fixed, so Hospital V has a financial incentive under capitation to decrease volume because lower volume leads to higher profits.

The analysis could be extended to include uncertainty in variable costs and prospective payment per admission, but the general results remain the same. If all costs are fixed, there is less objective financial risk to capitation contracts than to prospective payment contracts. If all costs are variable, there is less
objective financial risk to prospective payment contracts than to capitation contracts.

When assessing the relative objective financial risk of capitation contracts, the key question to providers is: "Are the costs at my organization predominantly fixed or predominantly variable?" If the costs are mostly fixed, then objective financial risk is actually reduced when moving from prospective payment to capitation because the fixed revenue stream better matches the fixed cost structure. On the other hand, if the cost structure is predominantly variable, moving to capitation will increase objective financial risk because the fixed revenue stream is a poor match for a cost structure that is highly correlated to volume.

Most healthcare providers, and hospitals in particular, have relatively high fixed-to-total-cost ratios. Thus, for most providers, capitation contracts actually have less objective financial risk than prospective payment contracts because financial risk is reduced by matching the uncertainties inherent in the revenue and cost streams. When organizations have a high percentage of fixed costs, a fixed revenue stream stabilizes profits, and hence reduces financial risk.

If objective financial risk is reduced under capitation contracts, why did our earlier descriptive analysis conclude that capitation is more risky than prospective payment? One reason, of course, is that the descriptive assessment did not consider in any systematic way the relationships between revenues and costs. More importantly, the numerical analysis ignored the subjective risk inherent in capitation contracts. The numerical analysis focused solely on objective financial risk—we assumed that providers know their cost structures and population characteristics well enough to be confident of the revenue and cost estimates. Under these conditions, capitation contracts are clearly less risky to providers with a high percentage of fixed costs.

To limit the overall financial risk of capitation contracts to objective risk, it is necessary that providers be able to accurately forecast costs and volumes for a large number of diagnoses for a given population. For example, assume that a hospital signs a capitation contract to provide all common inpatient services to a patient population of 100,000. If the hospital is to bear only objective financial risk, it must know with some confidence the expected volume by diagnosis, as well as the costs for treating those diagnoses. Thus, the
hospital needs relatively sophisticated actuarial and cost data. In addition to the confidence in cost and utilization data, providers must have a sufficient number of capitated lives to make the law of large numbers work in their favor. With too few patients covered by capitation, just one or two adverse cases can easily push expected profitability into realized losses. Only with tens of thousands of members can providers take advantage of the risk reduction inherent in treating a “portfolio” of patients.

Even if a contract has substantial underlying financial risk, whether objective or subjective, its effective riskiness is lessened if management can take actions to counter unexpected adverse trends as they develop. Suppose a hospital enters into a capitation contract without good estimates of volume and costs. If six months into the contract managers realized that total costs exceed estimates and hence the contract will be less profitable than expected, they would try to take actions to increase the contract’s profitability. The only two managerial actions available to turn a bad capitation contract into a good one is to decrease volume, lower costs, or both. In the past, hospitals with profitability problems solved such problems by raising charges and increasing volume. Under capitation, however, the prescription for increased profit requires actions—decreasing volume or lowering costs—with which providers have limited experience, and hence are more difficult to implement than previous prescriptions. Furthermore, when a high proportion of costs is fixed, cost-reduction efforts are extremely challenging because they can be achieved only by selling off plant and equipment and shrinking the labor force. Under capitation contracts, providers are less able to influence the profitability of a contract once it goes into force, so they are less able to cope with the given amount of financial risk faced.

Another risk that providers face under capitation is the impact of outliers. The costs associated with a single patient, especially to a hospital, can fall well beyond normal bounds, and hence one or just a few outliers can result in financial losses well beyond those estimated at the time a contract is signed. In general, prospective payment contracts have outlier provisions, so providers are somewhat protected against the risks associated with high-cost outliers. If capitation contracts do not contain such provisions, the risk of outliers increases the financial risk inherent in such contracts. Furthermore, to increase the probability that
realized volume, and hence cash flows, will be close to that forecasted, providers must have a relatively large number of covered lives under capitation contracts.

Our quantitative analysis leads to two primary conclusions about the relative risk of capitation contracts. First, the objective financial risk inherent in capitation contracts is not as high as most people think. Providers with a high percentage of fixed costs can actually stabilize earnings under capitation, and hence reduce financial risk. Second, the overall financial risk of capitation contracts, including both objective and subjective risk, can be very high if providers (1) do not have the actuarial and cost data available to make sound capitation pricing decisions; (2) do not have a sufficient number of capitated patients to take advantage of the law of large numbers; and (3) do not have the capability to reduce volume and cut costs, if necessary, to react to any adverse trends that might develop.

Taken together, these conclusions have several implications for healthcare providers. To prosper in a capitated environment, providers must be able to estimate accurately not only their own costs, but also the diagnoses and patient volumes that would result from a particular contract. This means that providers will need good costing systems and also that providers will need actuarial expertise, which is a domain historically left to insurers. Without these competencies, it will be impossible to enter into capitation contracts without bearing a high degree of subjective financial risk.

Also, providers will have to break with traditional paradigms. Financial problems can no longer be solved by raising charges and increasing volume. Under capitation, raising charges (having a high bid on a contract proposal) will mean fewer patients for the provider, which will have an adverse impact both on revenues and on achieving a capitated population sufficiently large to realize actuarial predictions. Furthermore, the key to success once the contract has been signed is to lower costs and utilization. This requires nontraditional strategies, so healthcare managers must exhibit flexibility and adaptability to successfully manage under capitation.

Finally, providers that are less efficient than their local counterparts confront very difficult issues when negotiating managed care contracts. Capitation contracts are usually set at rates that assume the
efficient delivery of services to control unnecessary services and costs. Less-efficient providers will experience more challenges under capitation because they must choose between accepting rates, which, at least in the short run, may not cover costs, or lose market share that they may not be able to regain. The difficulties that inefficient providers face do not result from financial risk differentials, but rather from prior management practices that did not sufficiently stress the efficient delivery of services.

Self-Test Questions

1. Briefly, describe the following reimbursement systems and, using the descriptive approach, analyze the risks to providers under each system:
   a. Charges
   b. Discounted charges
   c. Prospective payment
   d. Per diem
   e. Global pricing
   f. Capitation.

2. What is the basic source of financial risk?

3. Distinguish between objective and subjective financial risk.

4. What lessons can be learned from the quantitative risk assessment of prospective payment and capitation contracts?

DEVELOPMENT OF PREMIUM RATES

One of the primary financial management functions within managed care plans and integrated delivery systems is the development of premium rates for healthcare buyers, which involves estimating the total costs of providing healthcare services. In this section, we discuss several methodologies for estimating provider payments, which are then aggregated to estimate total costs, the basis for the premium rate.

Allocation of Premium Dollars

HMOs and other managed care organizations collect premium dollars from employers and other purchasers
of healthcare, and then use those dollars to pay providers, cover administrative expenses, and earn profits. To help better understand how HMOs set their premium rates, first consider Table 20.3, which illustrates how a typical premium dollar is spent. First, HMOs have the same types of management and marketing expenses as any other business, and the premium dollar must cover such costs. Also, it is necessary for HMOs to earn profits, both to create reserves for contingencies and for distribution to stockholders if investor owned. About 16 percent of the premium dollar goes to administration and profit, while the remaining 84 percent is paid out to providers. The biggest provider expense typically is for physicians, with approximately 12 percent of the premium dollar going to primary care physicians and 32 percent to specialists who are part of the HMO's provider panel.

<table>
<thead>
<tr>
<th>Total premium dollar</th>
<th>100%</th>
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<tbody>
<tr>
<td>Administration and profit</td>
<td>16%</td>
</tr>
<tr>
<td>Paid to within-system physicians:</td>
<td></td>
</tr>
<tr>
<td>Primary care</td>
<td>12%</td>
</tr>
<tr>
<td>Specialists</td>
<td>32%</td>
</tr>
<tr>
<td>Total to within-system physicians</td>
<td>44%</td>
</tr>
<tr>
<td>Paid to within-system hospitals/institutions</td>
<td>36%</td>
</tr>
<tr>
<td>Paid to out-of-system providers</td>
<td>4%</td>
</tr>
</tbody>
</table>

The next major item is payments for hospital and other institutional care provided within the system (within the HMO's provider panel), which totals 36 percent of the premium dollar. Finally, HMO members sometimes require services from providers that are out of the HMO's system, either because there are no in-
system providers for that service or the services were required outside the geographic area served by the HMO. Payments to out-of-system providers, including both physicians and hospitals/institutions, average 4 percent of the premium dollar.

Note that the Table 20.3 percentages are for illustration only, and there are wide variations among HMOs as to how the premium dollar is allocated. Healthcare purchasers want a high percentage of the premium dollar to go to providers to encourage them to provide needed services in a timely manner. Conversely, HMOs have an incentive to lower the amount paid to providers, both to increase profits and to ensure competitive pricing to buyers in an increasingly hostile marketplace.

Developing Premium Rates: An Illustration

There are many ways to develop the premium rates that managed care plans charge to purchasers. In this section, we illustrate several methods that an HMO or integrated delivery system can use to estimate the payments it must make to its providers to cover a defined population, which it can then aggregate and combine with its own costs to estimate a premium rate. Rates are developed as if all providers were capitated because the final premium rate will be quoted on a per member per month basis. However, actual reimbursement could be by capitation, discounted fee-for-service, or any other method.

Assume that BetterCare, Inc., an aggressively managed HMO, must develop a premium bid to submit to Big Business, a major employer in BetterCare's service area. To keep the illustration manageable, assume that all medically necessary in-area services can be provided by a single hospital that offers both inpatient and outpatient services including emergency room services, a single nursing home, a panel of primary care physicians, and a panel of specialist physicians. In addition, BetterCare must budget for covered care to be delivered out of area when its members are traveling. Thus, to develop its bid, BetterCare has to estimate the amount of payments to this set of providers for the covered population, plus allow for administrative expenses and profits.
Hospital Inpatient Rate

The *fee-for-service method* is often used to set the within-system hospital inpatient capitation rate. This method is based on expected usage and negotiated charges, rather than underlying costs, although there clearly should be a link between charges and costs. To illustrate the concept, assume that BetterCare targets 350 inpatient days for each 1,000 members, or 0.350 inpatient days per member. Furthermore, BetterCare believes that a fair fee-for-service charge in a competitive environment would be $938 per inpatient day. Note that the values chosen both for utilization and payment are not based on conventional reimbursement experience. Rather, the number of inpatient days reflects a highly managed working-age population, and the fee-for-service charge is designed to cover all hospital costs, including profits, in an efficiently run hospital that operates in a highly competitive environment. The inpatient cost per member per month (PMPM) is found as follows:

\[
\text{Inpatient cost PMPM} = \frac{\text{Per member utilization rate} \times \text{Fee-for-service rate}}{12} = \frac{0.350 \times $938}{12} = $27.35 \text{ PMPM.}
\]

Thus, using the fee-for-service method, BetterCare estimates inpatient costs for Big Business's HMO enrollees at $27.35 PMPM.

Other Institutional Rates

The rates for out-of-area hospital usage, hospital outpatient surgeries, and emergency room visits, as well as for skilled nursing home stays, were developed using the fee-for-service method discussed above. Here is a summary of BetterCare’s estimates for these services:

<table>
<thead>
<tr>
<th>Annual Utilization per</th>
<th>Fee-for-Service</th>
<th>Capitation</th>
</tr>
</thead>
</table>

20 - 18
### Service Rate PMPM

<table>
<thead>
<tr>
<th>Service</th>
<th>1,000 Members</th>
<th>Rate</th>
<th>Rate PMPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out-of-area inpatient days</td>
<td>25</td>
<td>$1,495</td>
<td>$3.11</td>
</tr>
<tr>
<td>Outpatient surgeries</td>
<td>50</td>
<td>1,082</td>
<td>4.51</td>
</tr>
<tr>
<td>Emergency room visits</td>
<td>125</td>
<td>138</td>
<td>1.44</td>
</tr>
<tr>
<td>Skilled nursing home days</td>
<td>5</td>
<td>150</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Here, each PMPM capitation rate was calculated by multiplying annual utilization times the fee-for-service rate, and then dividing the resulting product first by 1,000 to obtain a per member amount and then by 12 to get the PMPM rate. The end result is a capitation estimate of $9.12 PMPM for the services listed above. Of course, actual payments to these providers typically would be made on a discounted fee-for-service basis.

### Primary Care Rate

We will use the cost approach to estimate primary physicians' costs for Big Business's enrollees. This method is the most common for setting physicians' payments, and it is based on utilization and underlying costs, as opposed to charges. The starting point is expected patient demand, by specialty, for physicians' services. This demand is then translated into the number of full-time equivalent (FTE) physicians required per 1,000 members (enrollees), which depends on physician productivity. Finally, the cost for physician services is estimated by multiplying staffing requirements by the average cost per FTE, including base compensation, fringe benefits, and malpractice premiums. In addition, an amount—usually some dollar amount per 1,000 members—is added for clinical and administrative support for physicians.

In developing its capitation rate for primary care physicians, BetterCare made the following assumptions:

- On average, each enrollee makes 3.0 visits to a primary care physician per year, so each 1,000 enrollees makes 3,000 visits per year.
- Each primary care physician can handle 4,000 patient visits per year.
- Total compensation per primary care physician is $175,000 per year.
Under these assumptions, each 1,000 enrollees will require $3,000 / 4,000 = 0.75 primary care physicians, and hence each 1,000 enrollees will require $0.75 \times 175,000 = $131,250 in primary care services. Finally, the annual cost per member is $131,250 / 1,000 = $131.25, and the cost PMPM = $131.25 / 12 = $10.94. Thus, the rate that BetterCare will propose to Big Business will include $10.94 PMPM for primary care physician compensation.

Specialty Care Rate

The capitation rate for specialists' care is developed using the cost approach in a similar manner to that for primary care. Here are BetterCare's assumptions:

- On average, each enrollee is referred for 1.2 visits to specialty care physicians per year, so each 1,000 enrollees makes 1,200 visits per year.
- Each specialty physician can handle 2,000 patient visits per year.
- Total compensation per specialist is $284,000 per year.

Under these assumptions, each 1,000 enrollees will require $1,200 / 2,000 = 0.60 specialists, and hence each 1,000 enrollees will require $0.60 \times 284,000 = $170,400 in specialists' services. Finally, the annual cost per member is $170,400 / 1,000 = $170.40, so the cost PMPM = $170.40 / 12 = $14.20. Thus, the rate that BetterCare will propose to Big Business will include $14.20 PMPM for specialist physician compensation.

Other Physician-Related Costs Rate

Thus far, we have estimated the capitation rate for physicians' compensation, but we have not accounted for other costs associated with physicians' practices. First, physicians require, on average, 1.7 FTEs for clinical and administrative support, and each supporting staff member receives an average of $35,000 per year in total compensation. Because the physician requirement to support 1,000 members is 0.75 primary care plus 0.60 specialists, for a total of 1.35 physicians, each 1,000 members will require $1.35 \times 1.7 \times 35,000 \approx
$80,000 of physician's support, or $80,000 / 1,000 / 12 = $6.67 PMPM.

Next, expenditures on supplies, including administrative, medical, and diagnostic supplies, average $10 per visit, and members are expected to make 4.2 visits per year to both primary and specialty care physicians. Thus, the annual cost per member is $42, and the cost PMPM is estimated to be $42 / 12 = $3.50 PMPM. Finally, overhead expenses, including depreciation, rent, utilities, and so on, are estimated at $6.00 PMPM.

**Total Physician Rate**

BetterCare has estimated numerous categories of costs related solely to physicians. For ease, assume now that BetterCare plans to contract with a single medical group practice to provide all physicians' service and to pay the group a capitated rate. Then, the total capitation rate for the medical group would be as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rate (PMPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care</td>
<td>$10.94</td>
</tr>
<tr>
<td>Specialist care</td>
<td>14.20</td>
</tr>
<tr>
<td>Support staff</td>
<td>6.67</td>
</tr>
<tr>
<td>Supplies</td>
<td>3.50</td>
</tr>
<tr>
<td>Overhead</td>
<td>6.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$41.31</strong></td>
</tr>
<tr>
<td><strong>Profit (10%)</strong></td>
<td><strong>4.13</strong></td>
</tr>
<tr>
<td><strong>In-area total</strong></td>
<td><strong>$45.44</strong></td>
</tr>
<tr>
<td>Outside referrals</td>
<td>3.40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$48.84</strong></td>
</tr>
</tbody>
</table>

The $48.84 PMPM total capitation rate for the medical group is merely the aggregate of the rates previously developed for physicians' services, plus two additional elements. First, BetterCare believes that a fair profit margin on group practice businesses is 10 percent, so $4.13 PMPM is allowed for profit on the in-area physician subtotal of $41.31 PMPM. Second, $3.40 PMPM is allocated to cover referrals outside the group.
practice when needed either because a particular specialty is not available within the group or the member is outside the service area. Finally, note that the group might not capitate all its physicians even though it receives a capitated rate from BetterCare.

An Alternative Method for Physicians’ Rates

In general, the rates obtained from the first two methods would include adjustments for age and gender. An alternative method would be to start with utilization data already broken down by these categories. The demographic approach focuses on the age/gender distribution of the population being served, which is then coupled with cost or fee-for-service data to estimate the capitation rate. Table 20.4 illustrates the demographic-based approach by applying it to the population that would be served if BetterCare wins the contract to provide an HMO plan for Big Business.

<table>
<thead>
<tr>
<th>Age Band</th>
<th>Demographics</th>
<th>Primary Care</th>
<th>Specialist/Referral</th>
<th>Hospital/Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>0–1</td>
<td>1.9%</td>
<td>1.9%</td>
<td>$47.00</td>
<td>$47.00</td>
</tr>
<tr>
<td>2–4</td>
<td>2.8</td>
<td>2.8</td>
<td>20.25</td>
<td>20.25</td>
</tr>
<tr>
<td>5–19</td>
<td>12.4</td>
<td>12.4</td>
<td>11.04</td>
<td>11.04</td>
</tr>
<tr>
<td>20–29</td>
<td>11.4</td>
<td>15.4</td>
<td>10.53</td>
<td>15.92</td>
</tr>
<tr>
<td>30–39</td>
<td>9.6</td>
<td>10.0</td>
<td>13.04</td>
<td>17.56</td>
</tr>
<tr>
<td>40–49</td>
<td>5.3</td>
<td>5.7</td>
<td>16.40</td>
<td>19.56</td>
</tr>
<tr>
<td>50–59</td>
<td>3.6</td>
<td>3.6</td>
<td>20.74</td>
<td>22.74</td>
</tr>
<tr>
<td>60+</td>
<td>0.7</td>
<td>0.5</td>
<td>24.93</td>
<td>25.60</td>
</tr>
<tr>
<td>Total</td>
<td>47.7%</td>
<td>52.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20.4

Demographic-Based Rates for the Medical Group
The male/female costs were calculated by multiplying the population percentages for each gender by the applicable costs per member per month. The total cost for each service is merely the sum of the male and female costs.

Note that the total cost for in-area physician services, $16.17 + $29.27 = $45.44 PMPM, is the same as BetterCare estimated previously using the cost approach. If the data are consistent, different methods will lead to the same capitation rate. Also, the hospital/other institutional capitation rate of $36.47 PMPM is the same as the rate obtained earlier for these services: $27.35 + $9.12 = $36.47. Clearly, we "fudged" the data so our results would be consistent. In most cases, capitation rates developed using different methodologies will be different because of data inconsistencies, and hence judgment will have to be applied in the rate-setting process.

**Setting the Final Rate**

Remember that our goal here is to set a premium rate that BetterCare can use to make a bid to cover Big Business's employees. Thus far, we have estimated the PMPM rates required to pay all the providers needed to serve the population, both in area and out of area. In addition, we are assuming that pharmacy benefits will be handled separately, or *carved out*, and that the cost of these benefits would be $7.00 PMPM.

After all costs have been considered, BetterCare concludes that it can submit a bid of $108.21 PMPM.

*Medical costs:*
- Hospital inpatient: $27.35 PMPM
- Other institutional: $9.12
- Outpatient prescription drugs: $7.00
- Physician care: $48.84
- Total medical care costs: $92.31 PMPM

*HMO costs:*
Note that if BetterCare wins the contract from Big Business, the monthly revenue to providers will be somewhat higher (usually about 5 percent) than the embedded PMPM rates because enrollees will be required to make copayments for selected services.

In closing, note that BetterCare's bid most likely will be subject to market forces—that is, there will be multiple bidders for Big Business's health contract. If BetterCare's bid is to be accepted, it must offer the right combination of price and quality. If BetterCare's costs, and hence bid, are too high or its quality is too low, it will not get the contract and it must reassess its cost and quality structure to ensure that it is competitive on future bids.

Self-Test Questions

1. Roughly, what is the allocation of an HMO premium dollar?

2. Briefly, describe the following three methods for developing capitation rates:
   a. Fee-for-service method
   b. Cost approach
   c. Demographic approach

3. Of the three approaches, which one do you think would be the most accurate? The easiest to apply in practice?

RISK-SHARING ARRANGEMENTS

In an integrated delivery system, or within the provider panel of a managed care plan, different providers are brought together in a formal or informal arrangement to provide healthcare services to a defined population.
Often, system participants are paid under different reimbursement methods, and different reimbursement systems clearly create different incentives. To illustrate the concept, assume that an integrated delivery system uses capitation for primary care physicians, discounted fee-for-service for specialists, and per diem for institutional providers—hospitals and long-term care providers. In such a system, primary care physicians have the incentive to shift care to specialists and institutions because primary care physicians are capitated, and hence not rewarded for higher utilization. On the other hand, specialists and institutions would welcome the added volume because they are being paid on the basis of the amount of services provided. Overall, this differential in reimbursement creates incentives that increase total system costs, and hence costs to insurers and purchasers.

If both primary care and specialist physicians are capitated, primary care physicians would still have the incentive to make unnecessary referrals, but such referrals would no longer be welcome by specialists. If the institutions also are capitated, no provider wants increased volume, so conflicts are bound to occur between primary care physicians and specialists and between physicians and institutions.

In such situations, *risk-sharing* arrangements are often implemented to create incentives that encourage providers to act in the best interest of the system, rather than in their own self-interest. Generally, proper incentives are created within provider panels by establishing *withholds*, or *risk pools*, which are pools of money that are initially withheld and then distributed to panel members only if preestablished goals are met.

**Risk-Sharing Basics**

Risk pools can be used with any type of reimbursement system, such as the use of withholds in a per diem system, whereby the hospital is rewarded if utilization is less than expected and, in effect, penalized by not receiving some portion or all of the amount withheld if utilization exceeds the target. In effect, risk pools are designed to reward those providers that are most able to control costs through better utilization management, better cost control, or both. Risk-sharing arrangements can occur among physicians only,
among physicians and institutions, or among all providers. Furthermore, risk pools can be established to promote only financial goals or some combination of financial and nonfinancial goals.

Note that if a system is fully integrated and all subsidiary providers are owned by, and hence directly responsible to, the same parent, there is only one bottom line and no need for risk-sharing arrangements, at least in theory. Proper incentives are created by managerial control. However, in most systems today, providers are loosely affiliated in some way rather than belonging to the same business entity, and hence risk-sharing arrangements are needed to align the incentives of the diverse parties involved.

Typically, risk-sharing arrangements allocate 10–20 percent of each reimbursement dollar to one or more risk pools, often for primary care, specialty (referral) care, and institutional. Then, throughout the year, expenses are charged against the applicable pools, and at year-end, each pool's expenses are reconciled—that is, compared with those budgeted. Any surpluses are distributed to the participating providers on the basis of a prearranged formula, while any deficits typically are funded from network reserves.

Primary Care Withhold: Single Risk Pool

The best way to grasp the basics of risk sharing is through examples. In this section, we illustrate a withhold system for primary care physicians only. In the next section, we will illustrate a risk-sharing system that encompasses primary care physicians, specialists, and a hospital.

Here is the risk pool arrangement for primary care physicians (PCPs) used by one HMO. The HMO pays its PCPs by capitation, but a percentage of the total capitated amount is held in reserve and distributed to individual physicians if certain financial goals are met. In general, PCP goals are based on specialty care and hospital costs. Of course, the goal is to lower the overall cost of providing care, but cost reduction goals should not reduce the quality of care afforded to patients.

Assume that the HMO’s capitation payment to PCPs is $15 PMPM, but that 20 percent of this amount is placed into the PCP risk pool. The budgeted amount for specialty and hospital costs is $45 PMPM. Of course, the purpose of the pool is to encourage PCPs to take actions that result in realized
specialty and hospital costs that are less than those budgeted. For simplicity, assume that there are only three PCPs in the plan: (1) Physician L (for low-cost), (2) Physician M (for medium-cost), and (3) Physician H (for high-cost). Furthermore, assume that each physician has 1,000 patients under the plan, so there are 3,000 patients in total.

Table 20.5 contains the risk pool distributions under two different outcome scenarios. Line 1 gives each PCP’s initial annual capitation payment: $15 PMPM \times 12\text{ months} \times 1,000\text{ members} = $180,000. Thus, $3 \times $180,000 = $540,000 in total is allocated for PCP payments. However, 20 percent of the capitated amount is placed into the risk pool, so each PCP’s annual capitated payment is reduced by $0.20 \times $180,000 = $36,000. This reduction and the resulting $144,000 initial allocation are shown on Lines 2 and 3. Note that each of the members served by the three PCPs is allocated $45 for specialty and hospital costs, so the budgeted goal for these costs is $1,000 \times $45 \times 12 = $540,000 per PCP, or $1,620,000 in total, as shown on Line 4. Also, note that the total amount in the PCP risk pool is $3 \times $36,000 = $108,000.

---

Table 20.5
Primary Care Physician (PCP) Risk Pool (Annual Amounts)

<table>
<thead>
<tr>
<th>Physician L</th>
<th>Physician M</th>
<th>Physician H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocated amount</td>
<td>$180,000</td>
<td>$180,000</td>
</tr>
<tr>
<td>Withhold (20 percent)</td>
<td>(36,000)</td>
<td>(36,000)</td>
</tr>
<tr>
<td>Initial allocation</td>
<td>$144,000</td>
<td>$144,000</td>
</tr>
<tr>
<td>Budgeted referral costs</td>
<td>$540,000</td>
<td>$540,000</td>
</tr>
</tbody>
</table>

**Scenario 1: Distribution Based on Aggregate PCP Performance**

| 5. Actual referral costs | 500,000 | 560,000 | 680,000 |
| 6. Referral gain (loss) | 40,000 | (20,000) | (140,000) |
Scenario 2: Distribution Based on Individual PCP Performance

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Withhold returned</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. Total compensation</td>
<td>$144,000</td>
<td>$144,000</td>
<td>$144,000</td>
</tr>
</tbody>
</table>

Now, consider Scenario 1, contained in Lines 5, 6, 7, and 8. Here, the assumption is made that no PCP will receive any funds from the pool if it is empty at year-end. The actual referral costs for each PCP are the amounts shown on Line 5. The referral gain (loss) for each PCP is shown on Line 6, while the total gain (loss) for all three PCPs is $40,000 − $20,000 − $140,000 = −$120,000. This exceeds the $108,000 in the risk pool, so no funds remain for distribution. In fact, BetterCare will have to fund the $108,000 − $120,000 = $12,000 shortfall from its own reserves. Because no funds remain in the pool for distribution, each PCP’s realized compensation would be his or her initial allocation, $144,000.

Clearly, there is a problem with the way that the risk pool is allocated. Because no funds remained in the pool, all three PCPs were equally penalized, even though Physician L did an excellent job of controlling costs and Physician M came in only $20,000 over budget. The real cause of the failure to meet the overall referral budget was Physician H, who was a whopping $140,000 over budget. Is it fair to penalize L and M because of H’s actions? If, over time, it appears to Physicians L and M that the risk pool will always be exhausted as a result of actions beyond their control, they will have no motivation to continue to practice as efficiently as they do now. Also, it is important to know whether Physician H’s failure to meet the risk pool budget was a result of practice patterns, or did H have an extraordinary number of high-cost patients? If the patient mix is not equal across PCPs, obvious problems will arise, so the HMO must be careful in assigning patients to ensure, to the extent possible, that the utilization and intensity mix is evenly spread across PCPs or that adjustments are made to account for such differences.

Scenario 2 in Table 20.5 is similar to Scenario 1, except that payments are made from the withhold
to individual physicians regardless of the aggregate position of the pool. In this situation, the aggregate pool is really an artificiality. Because the HMO will reward individual PCPs that come in at or under budget regardless of aggregate performance, each PCP really has his or her own individual risk pool. Thus, as shown on Line 11, Physician L, because he or she came in below budget, received the entire withhold amount from his or her pool, which resulted in total compensation of $144,000 + $36,000 = $180,000. Physician M received $36,000 − $20,000 = $16,000 from his or her pool, for total compensation of $160,000; Physician H, on the other hand, received nothing from his or her pool, for a total compensation of $144,000. This type of arrangement creates better incentives for PCPs, but the HMO had to bear the total cost of the pool payments, $52,000, because the actions of Physician H depleted the pool. The key here is to modify the behavior of Physician H so that funds remain in the pool to make the incentive payments. Perhaps, after one year, Physician H will be motivated to follow lower-cost practice patterns because of the potential monetary rewards.

Note that there is an almost infinite number of ways in which a PCP risk pool can be distributed. Another alternative to Scenario 2 would be this: If the aggregate risk pool is depleted, payments to individual physicians will be cut in half. If this were the situation in Scenario 2 in Table 20.5, Physician L would get only $18,000 from the pool on Line 12, while Physician M would be paid $8,000. Now, the actions of Physician H have a direct bearing on the payments to L and M, so it is in the best interests of L, M, and the system to encourage H to lower costs. Also, with this distribution system, the HMO does not replace the full amount of the pool if it is depleted.

Primary Care and Referral Withholds: Two Risk Pools

The previous risk pool illustration placed only one set of providers at risk, the primary care physicians. In this section, we illustrate the use of two risk pools.

Assume that HealthyHMO, with 10,000 covered lives in a given service area, reimburses its primary care physicians under a capitated system, its specialty care physicians under a discounted fee-for-service system, and the hospital under a per diem system. To create proper incentives, HealthyHMO establishes
two risk pools: (1) a professional services risk pool for the physicians only and (2) an inpatient services risk pool shared equally by the HMO, physicians, and hospital.

**Professional Services Risk Pool (PSRP)**

Ten percent of the funds budgeted for specialty services are withheld in the professional services risk pool (PSRP). The total amount budgeted for professional services, including both primary and specialty care physicians, is $37 PMPM. With 10,000 members, the HMO's annual budget for professional services is $37 \times 10,000 \times 12 = $4,440,000.

The capitated payment for primary care physicians is $12 PMPM, for a total of $12 \times 10,000 \times 12 = $1,440,000. The difference between the total allocated for professional services and the capitated total for primary care services is $4,440,000 – $1,440,000 = $3,000,000, which is the amount allocated for specialty services. Because 10 percent of the specialists' budget is placed in the PSRP, it is funded at a level of $300,000, and the budget for specialist payments, after withhold, is $2,700,000.

When the budget year is over, a year-end reconciliation process adjusts for under- and overutilization, and allocates the pool among the primary care and specialist physicians. If actual costs exceed the $3,000,000 total specialty care budget, no distributions are made from the PSRP, and HealthyHMO must cover the shortfall. Table 20.6 illustrates end-of-year reconciliation under four different scenarios. In Scenario 1, actual payments for specialty services are assumed to be $3,000,000, as shown on Line 2. This results in a –$300,000 variance from the after-withhold budget, and the risk pool is depleted. Primary care physicians gain no additional income because the specialists have taken the entire amount in the pool in their fee-for-service payments.

<table>
<thead>
<tr>
<th>Table 20.6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professional Services Risk Pool (PSRP)</strong></td>
</tr>
<tr>
<td>(Annual Amounts)</td>
</tr>
</tbody>
</table>

**Scenario 1: Specialty Payments of $3,000,000**

1. Budgeted payments for specialty services $2,700,000
2. Actual payments for specialty services  3,000,000
3. Variance from budget                  ($ 300,000)
4. Risk pool starting amount            300,000
5. Remainder in pool                    $               0
6. Risk pool allocation                  $               0

Scenario 2: Specialty Payments of $3,100,000

7. Budgeted payments for specialty services      $2,700,000
8. Actual payments for specialty services              3,100,000
9. Variance from budget                                      ($  400,000)
10. Risk pool starting amount                                     300,000
11. Remainder in pool                                           ($  100,000)
12. Risk pool allocation                                           $             0

Scenario 3: Specialty Payments of $2,800,000

13. Budgeted payments for specialty services      $2,700,000
14. Actual payments for specialty services              2,800,000
15. Variance from budget                                      ($  100,000)
16. Risk pool starting amount                                     300,000
17. Remainder in pool                                           $   200,000
18. Risk pool allocation                                           $   200,000

Scenario 4: Specialty Payments of $2,600,000

19. Budgeted payments for specialty services      $2,700,000
20. Actual payments for specialty services              2,600,000
21. Variance from budget                                      ($  100,000)
22. Risk pool starting amount                                     300,000
23. Remainder in pool                                           $  400,000
24. Risk pool allocation  
    a. Physicians                                              $  300,000
    b. HMO                                                       100,000

Scenario 2 assumes specialist payments of $3,100,000, which results in a –$400,000 budget variance. Like Scenario 1, nothing is left for the primary care physicians. In fact, the specialists have not only exhausted the pool, but receive $100,000 in additional payments from HealthyHMO, which must bear all losses exceeding the amount placed into the pool.

Scenario 3, which begins on Line 13 in Table 20.6, presents a lower-cost situation, assuming
specialty care payments of only $2,800,000. Now, the budget variance is −$100,000, which leaves $200,000 in the pool for distribution. There are many methodologies that could be used to make the distribution. The $200,000 could be evenly split among all physicians. Or the pool could be distributed to physicians on a basis proportional to the amount of effort that they expend on HealthyHMO's patients, say, as measured by the number of patient visits or the dollar amount paid to each physician. Alternatively, the distribution could be based on the number of referrals made by primary care physicians and the number received by specialty physicians. In this situation, primary care physicians with fewer referrals would get a larger share of the pool, while specialists with a higher number of referrals would receive a larger share of the pool.

Scenario 4 is similar to Scenario 3, except that with only $2,600,000 paid to specialists over the year, the pool is left with $400,000. Now, $300,000 is available for distribution to physicians, and $100,000 is reclaimed by HealthyHMO.

**Inpatient Services Risk Pool (ISRP)**

HealthyHMO budgets for the inpatient services risk pool (ISRP) based on 350 inpatient days per 1,000 members, which is the rate experienced by the HMO last year for its entire membership. The negotiated per diem rate is $750. Thus, its 10,000 members are expected to use 10 × 350 = 3,500 inpatient days, which gives a before-withhold amount of 3,500 × $750 = $2,625,000. HealthyHMO withholds 10 percent of the inpatient budget for the ISRP, or $262,500. Thus, the adjusted per diem rate is 0.90 × $750 = $675, which results in a total budgeted payment for inpatient services of 3,500 × $675 = $2,362,500.

For reconciliation, suppose that actual utilization was 385 inpatient days versus the 350 forecast (10 percent variance higher than forecasted). The resulting ISRP distribution is contained in Table 20.7. With overutilization (as compared to the budget), realized payments total 3,850 × $675 = $2,598,750, as shown on Line 2, which results in a dollar variance of −$236,250, as shown on Line 3. Because the pool was initially funded with $262,500, the amount left in the pool after reconciliation is $262,500 − $236,250 = $26,250, which is shown on Line 5. This amount, according to distribution guidelines, is split evenly among primary
care physicians, specialty care physicians, and the hospital, as shown on Lines 6a through 6c.

Table 20.7
Inpatient Services Risk Pool (ISRP)
(Annual Amounts)

1. Budgeted payments for inpatient services $2,362,500
2. Actual payments for inpatient services 2,598,750
3. Variance from budget $(236,250)
4. Risk pool starting amount 262,500
5. Remainder in pool $26,250
6. Risk pool allocation
   a. Hospital (1/3) $8,750
   b. Primary care physicians (1/3) 8,750
   c. Specialty care physicians (1/3) 8,750
7. Total allocated $26,250

Note that the hospital's per diem payment before withhold was $750. After reconciliation, the hospital's total payment is $2,598,750 + $8,750 = $2,607,500. Because this total resulted from 3,850 inpatient days, the realized per diem payment was $2,607,500 / 3,850 = $677. This amount is less than the starting $750 amount because more than the budgeted amount was spent on inpatient care. However, because some funds remained in the pool, the final per diem amount is slightly more than the $675 after-withhold amount. Note that even if less than the budgeted amount is spent on inpatient care, the hospital will still receive less than the initial $750 per diem amount because any savings is split three ways.

The intent of the ISRP is to encourage the parties that have some control over hospital utilization to limit the number of inpatient days to those that are absolutely essential to patients' welfare. Of course, because the hospital is being reimbursed on a per diem basis, it has the incentive to maximize the number of inpatient days. Any gain from additional per diem payments will be three times as profitable as pool distributions because per diem payments are not shared with physicians. Therefore, the ISRP is really set up to motivate physicians, who actually control hospital admissions and discharges. Under per diem, the
hospital does have the incentive to lower costs because lower costs lead to higher profits. However, the best way to motivate the hospital to control utilization would be to put it under capitation payments.

Performance-Based Pools

In our discussion of risk pools thus far, we have focused exclusively on risk pools designed to control utilization and costs, but such pools can be structured to influence other types of behavior. For example, primary care, as well as specialty physicians, may participate in a performance-based pool, wherein the pool is distributed on the basis of both financial and nonfinancial performance.

Here is how a performance-based pool might work for primary care physicians. As before, some percentage—say, 20 percent—of the total capitation payment is withheld. At the end of the year, the pool is distributed to physicians based on performance in four areas: (1) quality of care, (2) quality of service, (3) cost control, and (4) organizational participation. Thirty percent of the pool is allocated to each of the first three areas, and 10 percent is allocated to organizational participation. Physicians are "graded" in each area. For example, quality of care could be based on chart reviews, continuing medical education hours, and number of liability claims; quality of service could be based on patient satisfaction surveys, as well as the ease with which patients can make appointments and visit waiting times; cost control could depend on the cost of referrals and other resource utilization; and organizational participation could be based on number of staff meetings attended and committee posts held.

At the end of the year, the pool distribution would reward those physicians that scored highest in each area and penalize those physicians that did worst. For example, assume that $10,000 remained in a pool for three physicians, so 0.30 × $10,000 = $3,000 is available for distribution based on quality of care performance. Furthermore, the physicians' quality of care performance scores are 55 for Physician X, 44 for Physician Y, and 33 for Physician Z. Note that these scores have no absolute meaning, but they do tell us how well the physicians have performed relative to one another on the quality-of-care dimension. Because the scores total 132, Physician X would receive 55 / 132 = 0.42 of the $3,000 pool, or $1,260; Physician Y
would receive $990; and Physician Z would receive the remaining $750. Of course, some minimum score could be established so that physicians would receive nothing from the pool if the minimum level of performance were not met. It is clear that the type of risk pool described in this section creates incentives for physicians to perform well along both financial and nonfinancial dimensions.

Self-Test Questions
1. What is the purpose of a risk pool?
2. Describe how a typical risk pool works.
3. Can a delivery system with multiple providers have more than one risk pool? Explain your answer.
4. What is a performance-based risk pool?

KEY CONCEPTS
Capitation and managed care have a profound influence on the risk and behavior of providers. In this chapter, some of the more important aspects of capitation and managed care are discussed. Here are its key concepts:

- **Capitation** is a flat periodic payment to a physician or other healthcare provider; it is the sole reimbursement for providing services to a defined population.

- Capitation payments are generally expressed as some dollar amount *per member per month* (PMPM), where the word "member" typically means enrollee in some managed care plan—usually a health maintenance organization (HMO).

- Although capitation payment is used mostly with primary care physicians, virtually any type of healthcare service can be reimbursed by capitation.

- Under fee-for-service, all volumes less than breakeven produce a loss for the provider, while all volumes greater than breakeven produce a profit. Under capitation, all volumes less than breakeven produce a profit, whereas all volumes greater than breakeven result in a loss. Thus, provider
incentives under capitation are opposite those under conventional reimbursement.

- In markets where capitation and aggressive utilization management has made inroads, the trend is toward fewer hospital beds and a physician mix that contains a greater proportion of primary care physicians. Most importantly, as capitation and utilization management gain in importance, historical utilization rates based on conventional reimbursement methodologies are not good predictors of future utilization.

- **Objective risk** occurs when the risk inherent in an uncertain outcome can be specified with confidence. **Subjective risk** occurs when the probability distribution itself is uncertain. Although the objective risk in capitation contracts is no greater, and potentially less, than that under conventional reimbursement, the subjective risk can be high.

- Several methods are used to set capitation rates for providers including (1) the fee-for-service equivalent method, (2) the budgetary, or cost, approach, and (3) the demographic-based approach.

- In integrated delivery systems, it is important to establish incentives that encourage providers to act in the best interest of the system, rather than in their own self-interest. One way to create proper incentives is to establish **withholds**, or **risk pools**, which are pools of money that are initially withheld, and then distributed to providers only if pre-established goals are met.

This concludes our discussion of capitation, rate setting, and risk sharing.

**SELECTED REFERENCES**


**NOTES**

1. Decision scientists classify risk in a more rigorous fashion as follows: *Ignorance* is the condition when decision makers can't even estimate the probable outcomes, say, the cash flows associated with a research and development (R&D) project; *uncertainty* is present when outcomes can be predicted, but no probabilities can be attached; and *risk* occurs when both outcomes and probabilities can be forecasted. These classifications are not commonly used by healthcare managers, so we will stick to the simpler objective and subjective risk classifications discussed in this paragraph.


3. According to the American Hospital Association, the average general acute care hospital has a cost structure of 75 percent fixed costs and 25 percent variable costs.

4. Providers that have capitation contracts can limit outlier risk by purchasing *stop-loss* insurance. However, such insurance reduces the profitability of the capitation contract.

5. Note that the utilization, charge, and cost data used in this section to develop capitation rates are for illustration only and do not necessarily reflect actual values being used today.