

Public Health
**LEADERSHIP &
MANAGEMENT**
Cases and Context

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CHAPTER 4

Financial Analysis for Health Care Organizations

The purpose of this chapter is to explain some basic concepts of finance. Financial analysis as it is conducted in for-profit and not-for-profit health care organizations is not often used in public health agencies. Financial analysis in public health does not require different methods, but it does require thinking in a different context. Unlike most other sectors of the economy, public health is composed primarily of government organizations or voluntary not-for-profit organizations. In addition, it is heavily regulated by government. These special characteristics of the industry should not preclude innovative and sound financial planning and analysis.

In addition, it is important to recognize that public health leaders do compete for financial resources with other sectors of the economy. Such competition takes many forms, including lobbying at the federal, state, and local levels for financial appropriations; seeking grants and contracts from government and foundations; competing for labor to staff public health programs; negotiating with government financial officials and vendors; and, for some public health agencies, competing with the private sector to deliver primary care services. Understanding how these competitors will analyze their financial situation is fundamental for making critical leadership and management judgments in public health. The financial analysis methods used in various types of health care settings are presented in this chapter to encourage creative thinking about these methods as they relate to, and can be used by, public health managers and leaders.

To analyze the financial health of any organization, you need to understand how to read the financial statements. The income statement and balance sheet are the two

This chapter was written by Mahmud Hassan, Rutgers University.

Exhibit 4.1. Memorial Hospital Consolidated Statement of Income (in thousands of dollars except per share amounts)

	1998	1999	2000
<i>Revenues</i>	<u>\$2,973,643</u>	<u>\$3,435,397</u>	<u>\$4,087,994</u>
Operating expenses	2,340,178	2,786,230	3,401,884
Depreciation and amortization	180,197	195,651	209,469
Interest expense	154,156	145,938	138,477
Interest income	<u>(30,923)</u>	<u>(46,064)</u>	<u>(60,570)</u>
	<u>2,643,608</u>	<u>3,081,755</u>	<u>3,689,260</u>
Income before income taxes	330,035	353,642	398,734
Provision for income taxes	<u>147,196</u>	<u>126,602</u>	<u>142,747</u>
Income before extraordinary items and cumulative effect of a change in accounting principle	182,839	277,040	255,987
Extraordinary loss on early extinguishment of debt, net of income tax of \$9,597	—	(16,133)	—
Cumulative effect on prior years of a change in accounting principle for retirement plan actuarial gains, net of income tax of \$9,645	—	16,214	—
<i>Net income</i>	<u>\$ 182,839</u>	<u>\$ 277,121</u>	<u>\$ 255,987</u>
Earnings per common share:			
Income before extraordinary item and cumulative effect of a change in accounting principle	\$1.86	\$2.30	\$2.56
Extraordinary loss on early extinguishment of debt	—	(.16)	—
Cumulative effect on prior years of a change in accounting principle for retirement plan actuarial gains	—	.16	—
<i>Net income per share</i>	<u>\$ 1.86</u>	<u>\$ 2.30</u>	<u>\$ 2.56</u>

most important financial reports of an organization. Not-for-profit and government organizations do not produce income statements, but they may prepare balance sheets for internal use. In this chapter, we will compute financial ratios, net income, and other financial performance figures for Memorial Hospital, a for-profit hospital company, for the years 1999 and 2000. The detailed financial statements are available in the Annual Report of Memorial Hospital. Copies of these statements are shown in Exhibits 4.1 and 4.2.

As previously mentioned, not-for-profit organizations are not required to prepare balance sheets or income statements. However, some not-for-profit health care organizations do prepare balance sheets to satisfy requirements of the Securities and Exchange Commission (SEC) and the rating agencies (Moody's or Standard and Poor's) when they borrow money by selling bonds. For example, University Hospital

Exhibit 4.2. Memorial Hospital Consolidated Balance Sheet (in thousands of dollars)

	1999	2000
Assets		
Current assets		
Cash and cash equivalents	\$140,201	\$105,340
Marketable securities	106,490	79,104
Accounts receivable less allowance for loss of \$157,505–2000 and \$110,909–1999	507,141	616,210
Inventories	69,786	80,632
Other current assets	104,788	133,615
Total current assets	928,407	1,014,901
Property and equipment, at cost		
Land	168,761	177,275
Buildings	1,678,685	1,759,959
Equipment	1,086,374	1,211,401
Construction in progress (estimated cost to complete and equipment after August 31, 2000–\$114,000)	41,729	57,719
Gross fixed assets	2,975,549	3,206,354
Less accumulated depreciation	987,790	1,154,868
Net fixed assets	1,987,759	2,051,486
Investments in insurance/health plan subsidiaries	315,875	462,541
Other assets	189,921	167,646
Total assets	<u>\$3,421,962</u>	<u>\$3,696,574</u>
Liabilities and common stockholders' equity		
Current liabilities		
Trade accounts payable	\$107,666	\$115,338
Salaries, wages, and other compensation	82,184	95,760
Other accrued expenses	173,956	229,201
Medical claims reserves	141,773	194,925
Income taxes	95,475	106,241
Long-term debt due within one year	32,680	35,045
Total current liabilities	633,734	776,510
Long-term debt	1,210,618	1,140,366
Deferred credits and other liabilities	422,993	452,722
Common stockholders' equity		
Common stock, 16 2/3¢ par; authorized 200 million shares; issued and outstanding 98,438,852 shares–2000 and 97,886,147 shares–1999	16,314	16,406
Capital in excess of par value	233,898	243,398
Other adjustments	(11,047)	(11,029)
Retained earnings	915,452	1,078,201
Stockholders' equity	1,154,617	1,326,976
Total liabilities and stockholders' equity	<u>\$3,421,962</u>	<u>\$3,696,574</u>

(a not-for-profit organization) borrowed money in 2001 from the capital market selling bonds. It had to prepare a balance sheet for three years, 1998 through 2000, have its bonds rated. The balance sheet for University Hospital is shown in Exhibit 4.3. Publicly traded for-profit hospitals are required by their charters to produce balance sheets and income statements each year. As mentioned earlier, we will analyze the financial statements of Memorial Hospital in this chapter.

The contents of balance sheets vary by company depending on the nature of the business and the type of ownership. Memorial Hospital's balance sheet contains some information regarding investments in subsidiaries, whereas the not-for-profit University Hospital reported a trustee fund in its balance sheet. Not-for-profit organizations show their equity or ownership share as a fund balance. For University Hospital, the amount of equity investment in 2000 was more than \$185 million, shown in Exhibit 4.3 under "fund balance." All other items in Exhibit 4.3 are comparable with those in Exhibit 4.2.

Financial ratios for University Hospital can be computed using the same formulas as shown for Memorial Hospital, but some financial ratios will require information from income statements. Because not-for-profit hospitals do not prepare income statements, the ratios for days in accounts receivable, average payment period, days' cash on hand, times interest earned, debt service coverage, operating margin, markup, return on assets, and so on cannot be computed for University Hospital.

In addition to the analysis of the income statement and balance sheet, an analysis of the cost of capital is provided. This is an important topic for the health care industry because of its dependence on technology and because of reimbursement issues involving third-party payors. The cost of capital for an organization is important because of its use as the discount rate in the analysis of investment projects.

The Income Statement

Income statements are prepared by proprietary hospitals for the computation of net profit and incurred tax. (A not-for-profit hospital is not required to prepare an income statement, but it may choose to do so to keep its various constituencies informed. The IRS does require "informational reports" to be filed for not-for-profit organizations generating more than \$25,000 in revenue.) Public health agencies, because they are generally part of the state government, are not subject to federal IRS regulations. However, public health may want to consider "informational reports" as a means of improving financial thinking within the organization.

The income statement shows all revenue receipts and expenditures during a year. Receipts usually are shown as gross revenue and net revenue. Net revenue is equal to gross revenue minus any uncollectibles such as contractual allowances, bad debt, charity care, and business discounts. In the case of Memorial Hospital, the net revenue for 2000 was (all figures for Memorial are in thousands of dollars):

Net revenue: \$4,087,994

Exhibit 4.3. University Hospital Balance Sheet

	<i>Fiscal Year Ended September 30</i>		
	<i>1998</i>	<i>1999</i>	<i>2000</i>
Assets			
Current assets			
Cash and short-term investments	\$5,768,785	\$7,184,131	\$2,084,610
Accounts receivable	51,415,071	40,085,497	53,338,410
Inventory	1,518,012	2,097,327	2,677,247
Prepaid expenses and other current assets	<u>6,971</u>	<u>0</u>	<u>0</u>
Total current assets	<u>58,708,839</u>	<u>49,366,955</u>	<u>58,100,267</u>
Property, plant, and equipment	171,270,793	197,572,904	212,140,823
Less accumulated depreciation	<u>61,175,801</u>	<u>72,626,040</u>	<u>85,433,535</u>
Net property, plant, and equipment	110,094,992	124,946,864	126,707,288
Capital fund	23,233,852	26,730,346	20,657,000
Trustee funds	<u>6,992,981</u>	<u>6,731,182</u>	<u>7,034,719</u>
Total assets	<u>\$199,030,664</u>	<u>\$207,775,347</u>	<u>\$212,499,274</u>
Liabilities and fund balance			
Current liabilities			
Accounts payable	\$2,684,893	\$3,911,504	\$2,638,836
Accrued salaries	462,326	663,161	1,084,692
Advances from third-party payors	1,051,000	0	0
Deferred revenue	61,561	85,554	85,554
Current portion of long-term debt	2,022,140	2,068,744	1,659,565
Other current liabilities	69,623	17,038	561,853
Accrued interest expense	<u>983,277</u>	<u>805,688</u>	<u>768,511</u>
Total current liabilities	<u>7,334,820</u>	<u>7,551,689</u>	<u>6,799,011</u>
Long-term debt	21,792,410	21,525,786	19,866,221
Fund balance	<u>169,903,434</u>	<u>178,697,872</u>	<u>185,834,042</u>
Total liabilities and fund balance	<u>\$199,030,664</u>	<u>\$207,775,347</u>	<u>\$212,499,274</u>

Memorial does not report gross revenue or uncollectibles.

Operating expenses represent selling, general, and administrative expenses.

Operating expense: \$3,401,884

Depreciation and amortization are non-cash expenses due to wear and tear on the decline in the useful life of an asset. (There is no cash payment for these items, but a profit company uses them as expense items to compute taxable income. Public health agencies do not pay income taxes; however, public health may want to consider maintaining such financial records because they can assist in planning for the replacement of high-cost assets as they wear out.) Depreciation can be on a straight-line basis or accelerated basis. For straight-line depreciation, the assumption is that there will be equal wear and tear on the asset each year of its useful life. Accelerated depreciation assumes the wear and tear is high during initial years and declines over time.

Depreciation and amortization:	\$209,469
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Interest expense is the amount paid to creditors on the total amount of debt the organization holds.

Interest expense:	\$138,477
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Interest income is computed by subtracting dividends and capital gains from total investment income. In the case of Memorial Hospital, this amount is a positive quantity for 2000 and hence entered as a negative quantity in the expense category (see Exhibit 4.1).

Interest income:	\$60,570
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Income before income taxes can be computed by subtracting operating expense, depreciation, amortization, interest expense, and interest income from net revenue.

Income before income taxes:	\$398,734
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Provision for state and federal taxes is computed at the statutory rate (35.8 percent for Memorial) on the income before income taxes.

Provision for income taxes:	\$142,747
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Net income is computed by subtracting provision for income taxes and other adjustments from the income before taxes.

Net income:	\$255,987
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The Balance Sheet

A balance sheet is a statement of the financial status of an organization at a particular point in time (date). It is divided into two sides: assets are shown on the left side and liabilities and owners' equity are shown on the right side. Assets are divided into cur-

rent assets and fixed assets. Current assets include cash, marketable securities, accounts receivable (less uncollectibles), inventories, and other current assets. Marketable securities are short-term government securities. Other current assets include prepaid expenses such as insurance premiums, advertising charges for the next year, and so on.

In the case of Memorial Hospital in 2000:

Cash and cash equivalents:	\$ 105,340
Marketable securities:	79,104
Accounts receivable less uncollectibles:	616,210
Inventories:	80,632
Other current assets:	133,615
Total current assets:	<u>\$1,014,901</u>

In this case, cash equivalents include investments in securities with a maturity of three months or less. Fixed assets are land, buildings, equipment, and construction in progress.

Land:	\$ 177,275
Buildings:	1,759,959
Equipment:	1,211,401
Construction in progress:	57,719
Gross fixed assets:	<u>\$3,206,354</u>

Accumulated depreciation is the sum of all the depreciation expenses (as found in the income statement) since the inception of the organization.

Accumulated depreciation:	\$1,154,868
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Net fixed assets are computed by subtracting the accumulated depreciation from the gross fixed assets.

Net fixed assets:	\$2,051,486
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Memorial Hospital shows investments in its subsidiaries in a separate category:

Investments in insurance/health plan subsidiaries:	\$ 462,541
Other assets:	167,646
Total assets:	<u>\$3,696,574</u>

On the other side of the balance sheet, liabilities include current liabilities, long-term liabilities, and other liabilities. Current liabilities are accounts payable, salaries, wages and other compensation payable, other accrued expenses, medical claims reserves, income taxes payable, and that portion of long-term debt due within one year. Other accrued expenses include any other unpaid amounts. Medical claims reserves include outstanding claims from Memorial Hospital's insurance business.

Total current liabilities:

\$776,510

All debts not due within one year are listed under long-term debt.

Long-term debt:

\$1,140,366

Owners' equity includes the value of common stock outstanding (at face value or "par value"), the value of the stocks in excess of par value, other adjustments in the value of stocks, and retained earnings. For not-for-profit hospitals, the owners' equity is represented by a fund balance. Retained earnings are the accumulated net income minus the amount of any dividends paid to shareholders.

Stockholders' equity:

\$1,326,976

Financial Ratios

Thus far, different items on Memorial Hospital's income statement and balance sheet have been explained. Now we can proceed with the computation of different financial ratios that are used to evaluate the financial health of an organization. The four types of financial ratios usually computed are liquidity ratios, capital structure ratios, activity ratios, and profitability ratios.

Liquidity ratios consist of different measures of liquidity (how rapidly a non-cash asset can be converted into cash without losing its value) and the cash position of an organization. Capital structure ratios include measures of leverage (the amount borrowed compared to the amount invested by owners) and equity (investment or ownership). Different types of efficiency measures are included in the activity ratios, and a variety of profitability measures (the extent to which income exceeds expenses) are included in the profitability ratios. Each of these four types of ratios is computed and described below. The first example is for 2000, and the second example is for 1999.

Liquidity Ratios

Current Ratio

$$\frac{\text{current assets}}{\text{current liabilities}} = \text{current ratio}$$

$$\frac{1,014,901}{776,510} = 1.31 \text{ (2000)}$$

$$\frac{928,407}{633,734} = 1.46 \text{ (1999)}$$

Current ratio is one of the most widely used financial ratios. It represents the firm's ability to pay current financial obligations out of current assets. A higher value of current ratio is better than a lower value. A value of 1.31 in 2000 means that for every dollar of current liability, Memorial Hospital had \$1.31 in current assets. The value declined from 1.46 in 1999. This means that Memorial Hospital's liquidity (ability to pay financial claims) deteriorated in 2000. It is possible for a firm with a high current ratio to experience payment problems if its current assets are not available in liquid form (cash or short-term investments) in time to meet the current obligations. A large current ratio may also imply idle cash, too much investment in inventory, or bad collection policies resulting in large accounts receivable. To verify the possibility that a high current ratio may indicate overinvestment in current assets or a high number of days in accounts receivable, the current-asset turnover and inventory ratios should be analyzed. Organizations with low current ratios can reduce the probability of short-term liquidity problems by carrying larger balances of liquid assets.

Quick Ratio

$$\frac{\text{current assets} - \text{inventory}}{\text{current liabilities}} = \text{quick ratio}$$

$$\frac{1,014,901 - 80,632}{776,510} = 1.20 \text{ (2000)}$$

$$\frac{928,407 - 69,786}{633,734} = 1.35 \text{ (1999)}$$

The quick ratio is a more stringent test of liquidity than the current ratio. A higher quick ratio implies a better liquidity position for the organization. However, because it includes accounts receivable, a high value could indicate a bad collection policy, and a low quick ratio is not necessarily indicative of a future liquidity problem. For example, a large accounts payable (due to construction, for example) might result in a lower quick ratio, but the construction accounts payable does not require payment from the current assets. It is paid out of construction-in-progress assets. In the case of Memorial Hospital, the quick ratio declined from 1.35 in 1999 to 1.20 in 2000. This says that Memorial Hospital can pay off its current liabilities from its current assets without liquidating inventory, even though the quick ratio declined between 1999 and 2000.

Acid Test Ratio

$$\frac{\text{cash plus marketable securities}}{\text{current liabilities}} = \text{acid test ratio}$$

$$\frac{105,340 + 79,104}{776,510} = 0.24 \text{ (2000)}$$

$$\frac{140,202 + 106,490}{633,734} = 0.39 \text{ (1999)}$$

The acid test ratio is the most stringent test of liquidity. It measures the firm's ability to pay its current liabilities out of cash and marketable securities only. A high value is a good indication of a favorable liquidity position, although a very high value may imply too much idle cash and inefficient investment-portfolio management. The primary source of funds for paying current liabilities is usually collections from accounts receivable. Firms with large variances in collection of accounts receivable should maintain higher levels of cash and short-term investments, which would result in a higher acid test ratio. Memorial Hospital's acid test ratio declined from 0.39 in 1999 to 0.24 in 2000. This means that in 2000 Memorial Hospital could pay off \$0.24 of every dollar of its current liabilities from its cash and marketable securities. An increase in the quick ratio and a decrease in the acid test ratio indicate an increase in the days in accounts receivable ratio.

Days in Accounts Receivable (A/R) Ratio

$$\frac{\text{net accounts receivable}}{\text{net revenue}} \times 365 = \text{days in A/R ratio}$$

$$\frac{616,210}{4,087,994} \times 365 = 55.02 \text{ (2000)}$$

$$\frac{507,141}{3,435,397} \times 365 = 53.88 \text{ (1999)}$$

This ratio represents the average collection period. The value for this ratio provides a measure of the average time that receivables are outstanding. A value of 55 in 2000 implies that a patient discharged from Memorial Hospital pays the bill on the fifty-fifth day from the date of his or her discharge. High values imply a longer collection period and thus a greater sum in accounts receivable. An increase in the number of days in the collection period may result in a shortage of cash. The short-term solution would be to borrow or to liquidate a part of the investment portfolio. A continuing increase in the collection period would require an increase in operating margin or equity financing. To reduce the A/R collection period, the health care organization might improve management of the business office and improve third-party payor relationships.

Average Payment Period Ratio

$$\frac{\text{current liabilities}}{\text{operating expenses} - \text{depreciation}} \times 365 = \text{average payment period ratio}$$

$$\frac{776,510}{3,401,884 - 209,469} \times 365 = 88.78 \text{ (2000)}$$

$$\frac{633,734}{2,786,230 - 195,651} \times 365 = 89.29 \text{ (1999)}$$

The average payment period ratio is the counterpart to the days in accounts receivable ratio. The average payment period provides a measure of the average time that elapses before current liabilities are paid. A high value for this ratio indicates a liquidity problem. Low values for this ratio may not always imply a good liquidity position; they might simply be due to a change in policy. For example, changing payroll from biweekly payments to weekly payments will decrease the value for this ratio. A very low value for this ratio might also indicate poor cash management, including poor investment-portfolio management. In both 1999 and 2000, Memorial Hospital took about eighty-nine days to pay off its current liabilities.

Days' Cash-on-Hand Ratio

$$\frac{\text{cash} + \text{marketable securities}}{\text{operating expenses} - \text{depreciation}} \times 365 = \text{days' cash on-hand ratio}$$

$$\frac{105,340 + 79,104}{3,401,884 - 209,469} \times 365 = 21.09 \text{ (2000)}$$

$$\frac{140,202 + 106,490}{2,786,230 - 195,651} \times 365 = 34.76 \text{ (1999)}$$

The days' cash-on-hand ratio measures the number of days of average cash expenses that a firm maintains in cash and marketable securities. A high value for this ratio implies a greater ability to meet short-term financial obligations. High values for the days' cash-on-hand ratio, however, are not always in the best interest of the organization. They may imply over investment in liquid assets that have a very low rate of return.

An increase in the days in accounts receivable ratio may be associated with a reduction in the days' cash-on-hand ratio. If the increase in the days in accounts receivable ratio is permanent, some alternative financing may be necessary. In 2000, Memorial Hospital had twenty-one days of operating expenses in cash and marketable securities.

Capital Structure Ratios

Equity Ratio

$$\frac{\text{fund balance or stockholders' equity}}{\text{total assets}} = \text{equity ratio}$$

$$\frac{1,326,976}{3,696,574} = 0.36 \text{ (2000)}$$

$$\frac{1,154,617}{3,421,962} = 0.34 \text{ (1999)}$$

The equity ratio measures the proportion of total assets that have been financed with equity. High values for this ratio imply that a greater amount of equity relative to debt has been used to finance the total assets. Creditors usually consider this a sign of good financial health because it means less debt and therefore less likelihood of insolvency. A high equity ratio does not always imply solvency. Poor profitability may result in a cash-flow problem that weakens the liquidity position. Equity financing of 100 percent is not desirable because it increases the cost of capital. In practice, some mix of debt and equity is used to finance an organization's total assets. In 2000, Memorial Hospital invested \$0.36 of its own funds in every dollar of total assets. The remaining \$0.64 came from borrowed funds.

Long-Term Debt-to-Equity Ratio

$$\frac{\text{long-term debt}}{\text{fund balance or stockholders' equity}} = \text{long-term debt-to-equity ratio}$$

$$\frac{1,140,366}{1,326,976} = 0.86 \text{ (2000)}$$

$$\frac{1,210,618}{1,154,617} = 1.05 \text{ (1999)}$$

Long-term debt and equity are permanent capital because they are not repaid within one year. A higher ratio implies a greater amount of external capital in the form of debt relative to equity. This is viewed unfavorably by creditors, although a high long-term debt-to-equity ratio may not prohibit future debt financing (nor does a low ratio guarantee a favorable credit line). The ability to repay debt, rather than the amount of debt, is the important issue. A high long-term debt-to-equity ratio can be risky for an organization if it has high and stable values for debt service coverage (loan payments) and low times-interest-earned ratios. In 2000, Memorial Hospital had \$0.86 in long-term debt for every dollar of its own funds. The value had

declined somewhat in 2000 from \$1.05 in 1999. This is an indication of a more favorable financial condition for Memorial Hospital in 2000.

Fixed-Asset Financing Ratio

$$\frac{\text{long-term debt}}{\text{net fixed asset}} = \text{fixed-asset financing ratio}$$

$$\frac{1,140,366}{2,051,486} = 0.56 \text{ (2000)}$$

$$\frac{1,210,618}{1,987,759} = 0.61 \text{ (1999)}$$

The fixed-asset financing ratio measures the extent of long-term debt invested in fixed assets. A high value is considered by creditors to be an indicator of future debt repayment problems. The numerator of the ratio represents a future demand for cash, and the denominator is the source to generate that cash in the form of depreciation charges. In 2000, 56 percent of Memorial Hospital's net fixed assets were funded by long-term debt.

High values for the fixed-asset financing ratio are associated with low equity financing and high long-term debt-to-equity ratios. The risk of insolvency resulting from a high value of the fixed-asset ratio can be partially offset by achieving high values for the times-interest-earned ratio and the high debt service coverage ratio.

Times-Interest-Earned Ratio

$$\frac{\text{excess of revenues over expenses} + \text{interest expense}}{\text{interest expense}} = \text{times-interest-earned ratio}$$

$$\frac{686,110 + 138,477}{138,477} = 5.95 \text{ (2000)}$$

$$\frac{649,167 + 145,938}{145,938} = 5.45 \text{ (1999)}$$

(Note: The excess of revenues over expenses is computed from the first two lines of Exhibit 4.1.)

The times-interest-earned ratio measures the ability of a firm to pay its interest expense obligation. The higher the value, the better the financial ability of the firm to pay its interest obligation. Note that this ratio does not measure the ability of the firm to repay the principal; therefore, it is important to consider both the times-interest-earned and debt service coverage ratios when evaluating a firm's ability to pay its total debt obligation (interest expense plus principal payment).

Debt Service Coverage Ratio

$$\frac{\text{excess of revenues over expenses} + \text{depreciation} + \text{interest}}{\text{principal payment} + \text{interest expense}} = \text{debt service coverage ratio}$$

$$\frac{686,110 + 209,469 + 138,477}{63,980 + 138,477} = 5.11 \text{ (2000)}$$

$$\frac{649,167 + 195,651 + 145,938}{256,387 + 145,938} = 2.46 \text{ (1999)}$$

(Note: Principal payments for 2000 and 1999, respectively, are \$63,980 and \$256,387. These are not shown in the financial statements provided here but are shown in the detailed cash-flow statements of Memorial Hospital's 2000 Annual Report.)

The debt service coverage ratio measures the firm's ability to pay its total debt obligation (both interest and principal). High values are considered favorably by creditors; however, this interpretation could be misleading in some cases, especially in the early years of a capital-expansion program when debt principal is not yet due but the depreciation expense has started. In this situation, the times-interest-earned and the fixed-asset financing ratios are better measures of the debt repayment ability of a firm.

It is important to maintain a high debt service coverage when new debt financing is being considered. The ability to attract debt capital with favorable terms may be related to past debt service coverage ratios.

Activity Ratios*Asset Turnover Ratio*

$$\frac{\text{total revenue}}{\text{total assets}} = \text{asset turnover ratio}$$

$$\frac{4,087,994}{3,696,574} = 1.11 \text{ (2000)}$$

$$\frac{3,435,397}{3,421,962} = 1.00 \text{ (1999)}$$

The asset turnover ratio measures the dollar amount of revenue generated per dollar of investment. This is a measure of efficiency. Higher values for this ratio imply better usage of the available resources. In 2000, Memorial Hospital generated \$1.11 in revenue for every dollar invested in assets. This ratio should not be the only criterion of efficiency because the age of the plant affects this ratio rather significantly. As the plant gets older, the book value of the asset, net of depreciation, gets smaller, resulting

in a higher asset turnover ratio. The point is that the age of the plant needs to be considered when analyzing asset turnover ratios.

Fixed-Asset Turnover Ratio

$$\frac{\text{total revenue}}{\text{net fixed assets}} = \text{fixed-asset turnover ratio}$$

$$\frac{4,087,994}{2,051,486} = 1.99 \text{ (2000)}$$

$$\frac{3,435,397}{1,987,759} = 1.73 \text{ (1999)}$$

This ratio computes dollars of revenue generated for each dollar of investment in fixed assets. The items included in fixed assets are land, buildings, equipment, and furniture. The ratio represents those assets not intended for sale that are used over and over again to provide the services of the health care organization. High values for the fixed-asset turnover ratio are usually regarded as a positive indication of operating efficiency.

The fixed-asset turnover ratio is also likely to be affected by the age of the plant, as in the case of the asset-turnover ratio. The fixed-asset turnover ratio decreases immediately after an expansion or replacement program.

Current-Asset Turnover Ratio

$$\frac{\text{total revenue}}{\text{current assets}} = \text{current-asset turnover ratio}$$

$$\frac{4,087,994}{1,014,901} = 4.03 \text{ (2000)}$$

$$\frac{3,435,397}{928,407} = 3.70 \text{ (1999)}$$

The current-asset turnover ratio measures the dollars of revenue generated per dollar of investment in current assets. The lower the investment in current assets and the higher the current-asset turnover ratio, the more efficient the organization. This does not imply that the investment in current assets should be cut to a minimum; that would cause delivery of services to be impaired, which would create severe short-term operating problems.

A high value for the current-asset turnover ratio is better than a low value, but a lower value might be the result of an expansion program during which the organization holds more liquid assets. A low or high value for the current-asset turnover ratio

can be further investigated and diagnosed by analyzing the days' cash-on-hand ratio, the days in accounts receivable ratio, and the inventory turnover ratio.

Inventory Turnover Ratio

$$\frac{\text{total revenue}}{\text{inventory}} = \text{inventory turnover ratio}$$

$$\frac{4,087,994}{80,632} = 50.70 \text{ (2000)}$$

$$\frac{3,435,397}{69,786} = 49.23 \text{ (1999)}$$

An inventory turnover ratio measures the dollars of revenue generated per dollar of investment in inventory. A higher value for this ratio indicates operating efficiency because the organization is not tying up a lot of money in inventory. However, possible impacts on customer service, such as being out of stock, are not considered.

An organization using just-in-time (JIT) inventory management would have a high inventory turnover ratio. Other reasons for low investments in inventory (resulting in a high inventory turnover ratio) include geographic location, access to suppliers, unavailability of quantity discounts, and so on.

Profitability Ratios

Deductible Ratio

$$\frac{\text{gross revenue} - \text{net revenue}}{\text{gross revenue}} = \text{deductible ratio}$$

(Note: Memorial Hospital does not report gross revenue.)

The deductible ratio measures the proportion of gross revenue that is not expected to be realized because of contractual allowances, bad debts, charity care, volume discounts, and so on. In the hospital industry, this ratio is very important because of the widespread presence of contractual allowances for insurers, health maintenance organizations, preferred provider organizations, and charity care to indigent patients. From a profitability point of view, increasing values of the deductible ratio result in lower profitability. A high deductible ratio may not imply poor profitability if the organization has a high markup or a large amount of non-operating revenue (for example, philanthropic donations). The deductible ratio should be monitored closely against changes in the collection process, reimbursement management, or the organization's charity care policy.

Markup Ratio

$$\frac{\text{gross revenue}}{\text{operating expenses}} = \text{markup ratio}$$

(Note: Memorial Hospital does not report gross revenue.)

The markup ratio measures the multiples by which prices are set above expenses. Higher numbers for this ratio imply a higher price per dollar of expenses and the likelihood of achieving greater profitability. If a high markup ratio is associated with a high deductible ratio, then the organization may not be any better off. Organizations with relatively old plants and a high debt-to-principal payment schedule may need to maintain relatively high markup ratios. However, if markups are too high, the organization may lose clients and eventually become insolvent. If it is too low, then the organization may become insolvent. The markup ratio is directly related to the operating margin ratio, the return on total asset ratio, the return on equity ratio, the debt service coverage ratio, and the times-interest-earned ratio. An increase in prices may improve profitability, but depending on the third-party payor mix, it may also increase the deductible ratio, driving profitability downward.

Operating Margin Ratio

$$\frac{\text{net income}}{\text{total revenue}} = \text{operating margin ratio}$$

$$\frac{255,987}{4,087,994} = 0.06 \text{ (2000)}$$

$$\frac{227,121}{3,435,397} = 0.07 \text{ (1999)}$$

This ratio is a measure of profitability. Net income is before any extraordinary items. Alternative measures of profitability include return on total assets or return on equity. A low operating margin is not necessarily an indication of poor profitability if the organization has significant non-operating revenue from investment income, philanthropic donations, or any other sources. Improvement in the operating margin usually results in higher working capital, which in turn improves liquidity ratios.

Operating Margin Price-Level Adjusted Ratio

$$\frac{\text{net income} + \text{depreciation} - \text{price-level depreciation}}{\text{total revenue}} = \text{operating margin price-level adjusted ratio}$$

$$\frac{255,987 + 209,469 - 242,984}{4,087,994} = 0.05 \text{ (2000)}$$

$$\frac{227,121 + 195,651 - 219,129}{3,435,397} = 0.06 \text{ (1999)}$$

(Note: The age of the plant in 2000, as computed earlier, is six years. This indicates that investments in plant assets were made in 1994. Price-level depreciation is defined as the amount of annual depreciation expressed in the year of the investment. In this case, because the investments were made in 1994, the annual depreciation for 1999 and 2000 should be expressed in 1994 dollars. Assume the purchasing power of the dollar declined to 0.88 and 0.84 in 1999 and 2000, respectively, using 1994 as the reference year. Thus, a dollar in 1994 is worth only \$0.88 in 1999 and \$0.84 in 2000 because of inflation. The Consumer Price Index [CPI] for 1999 and 2000 was 1.12 and 1.16, respectively, using 1994 as the reference [base] year. The price-level depreciation for 1999 and 2000 is computed as the product of annual depreciation expenses and the CPI of each year.)

This ratio is the same as the operating margin ratio except the depreciation expenses are adjusted for inflation. When equipment is purchased, a depreciation schedule is developed that identifies the future deductions from the operating revenue for the depreciation expense. The dollar values posted are based on the year the equipment was acquired. Because of inflation, those posted dollar values may be worth less than the original estimate. Therefore, the operating margin should be computed to reflect the inflation-adjusted depreciation, not the originally estimated depreciation.

Higher inflation translates into higher inflation-adjusted depreciation, and hence the lower the operating margin in the price-level adjusted ratio. In 2000, Memorial Hospital's operating margin ratio was 6 percent, but after the depreciation expense was adjusted for inflation, the operating margin dropped to 5 percent.

Return on Total Assets (ROA)

$$\frac{\text{net income}}{\text{total assets}} = \text{return on total assets}$$

$$\frac{255,987}{3,696,574} = 0.07 \text{ (2000)}$$

$$\frac{227,121}{3,421,962} = 0.07 \text{ (1999)}$$

The return on total assets measures the amount of net income earned per dollar of investment in total assets. It is a measure of profitability. This ratio is affected by the age of the plant. An organization with a relatively old and largely depreciated plant may show a higher return on assets ratio. If the organization is planning a major replacement, this high profit rate may be misleading for creditors.

Return on Equity (ROE)

$$\frac{\text{net income}}{\text{fund balance or shareholders' equity}} = \text{return on equity}$$

$$\frac{255,987}{1,326,976} = 0.19 \text{ (2000)}$$

$$\frac{227,121}{1,154,617} = 0.20 \text{ (1999)}$$

This ratio, similar to the return on assets ratio, measures the extent of profitability but uses return on equity investment instead of total assets. Many analysts consider the return on equity as the primary test of profitability. Unless a satisfactory return on equity is generated, the organization may find it very difficult to raise future equity capital by selling new shares.

A high return on equity may not imply sound financial health because the organization might have huge debt and earned the profit on monthly debt-financed (leased) assets. Further analysis of the return on equity ratio compared to the return on assets ratio would indicate the effect of debt-financed assets. If replacement needs are expected to be financed from operating income, the return on total assets ratio may be a better indicator of profitability than the return on equity ratio.

Other Financial Information

Age of the Facility

$$\frac{\text{accumulated depreciation}}{\text{depreciation expense}} = \text{age of the facility}$$

$$\frac{1,154,868}{209,469} = 5.51 \text{ (2000)}$$

$$\frac{987,790}{195,651} = 5.05 \text{ (1999)}$$

This is a very crude formula to estimate the age of the plant in years. This measure is more reliable if straight-line rather than accelerated depreciation is used. With the accelerated depreciation method, this formula tends to underestimate the age of newer plants and overestimate the age of older plants. When inflation is occurring, the formula underestimates the age of the plant because the annual depreciation expense increases with inflation.

Working Capital

$$\begin{aligned}\text{current assets} + \text{current liabilities} &= \text{working capital} \\ \$1,014,901 + 776,510 &= \$1,791,411 \text{ (2000)} \\ \$928,407 + 633,734 &= \$1,562,141 \text{ (1999)}\end{aligned}$$

The amount of working capital, defined as current assets plus current liabilities, is very important for an organization in its day-to-day operations. An organization's liquidity depends on the amount of working capital.

Net Working Capital

$$\begin{aligned}\text{current assets} - \text{current liabilities} &= \text{net working capital} \\ \$1,014,901 - 776,510 &= \$238,391 \text{ (2000)} \\ \$928,407 - 633,734 &= \$294,673 \text{ (1999)}\end{aligned}$$

Many analysts want to find out the net liquidity position (net working capital) of an organization. Net liquidity is computed by subtracting current liabilities from current assets. If the organization were to pay its current obligations (current liabilities), how much working capital would be left? The answer is the net working capital.

Limitations of Ratio Analysis

The financial ratios we have discussed provide valuable information concerning the financial health of an organization. We computed different ratios for Memorial Hospital for two consecutive years, and these indicate changes in financial performance by the organization. In addition, every ratio can be compared with national or regional averages that are available annually from the Financial Analysis Service (FAS) of the Healthcare Financial Management Association (HFMA). These national or regional averages are called the standards of the industry. Public health does not have a widely accepted set of standard financial ratios; hence, no national or regional comparative standards for the financial performance of a public health agency exist.

An individual hospital's ratios are compared with these standards, and financial performance is evaluated. If a hospital is older or newer than the rest of the hospitals in the region, then comparing its financial ratios with the regional averages is not quite as meaningful. Financial ratios reflect the activities of the organization in the past year or years; however, financial ratios do not reflect strategic planning by the organization. It is possible that a hospital is going through a structural change to achieve future benefits, which would affect many of the ratios. Thus, the long-term planning of the hospital must be considered as well as the financial ratios. Using financial ratios alone may give the wrong signal to analysts.

The presence of severe inflation in the early or later years of a trend analysis makes the analysis less reliable. In addition, values for the financial ratios depend on the ac-

counting practices and policies of the organization. For example, the value of investment in inventory depends on the valuation policies of the organization (first in, first out or last in, first out) and the depreciation policies (straight-line or accelerated), which in turn determine the value of net assets, and so on. To the extent that these policies vary, financial ratios will vary as well.

Cost of Capital

When organizations borrow money, they have to pay interest on the debt. If an organization chooses to use its own funds for the acquisition or replacement of an asset, an opportunity cost is associated with that decision, called the *cost of equity*. In many cases, some combination of debt and equity is used to finance a capital investment. The weighted average cost of capital (WACC) is derived as an average cost of debt (k_d) and cost of equity (k_e). (A numerical example follows later in the section.)

$$\text{WACC} = Dk_d + (1 - D)k_e$$

where D is the ratio of debt to assets

Some insurers reimburse hospitals on a cost basis so that a portion of the cost of debt (k_d) is considered a pass-through. Assuming M is the proportion of cost-based reimbursement, the cost of debt is $(1 - M)k_d$. Some insurers pay on a cost-plus basis to for-profit hospitals, where the payment above the cost represents some agreed to (or at least known) return on equity. For-profit hospitals pay taxes on income at the current tax rate (t_c). Interest payments by for-profit hospitals work as a tax shield because tax liability decreases with an increase in interest payments. However, for-profit organizations have to pay taxes on any return they earn on their equity investment. Assuming k_e^m as the return on equity and m' as the proportion from the payor that uses the cost-plus basis, then the WACC for not-for-profit (np) and for-profit (fp) institutions can be written as

$$\begin{aligned}\text{WACC}_{np} &= D(1 - M)k_d + (1 - D)k_e \\ \text{WACC}_{fp} &= D(1 - M)(1 - t_c)k_d + (1 - D)(k_e - m'[1 - t_c]k_e^m).\end{aligned}$$

Cost of Debt

To compute the cost of debt (k_d), data must be collected on the types and amount of debt and the corresponding interest rates for different hospitals over several years. For each year, a weighted average cost of debt can be computed using the individual debt information. Assume that the cost of debt (k_d) for not-for-profit and for-profit hospitals in 2000 is 5.4 percent and 7.5 percent, respectively. Further assume that the proportion of payors who pay cost-based reimbursement (M) are 10 percent and 8

percent for not-for-profit and for-profit hospitals, respectively. The effective corporate tax rate (t_c) for the for-profit hospitals in 2000 is assumed to be 22 percent.

The cost of debt for the not-for-profit and for-profit hospitals can then be computed as

$$\begin{aligned}
 \text{Not-for-profit cost of debt} &= (1 - M)k_d \\
 &= (1 - 0.10)5.4 \\
 &= 4.86 \text{ percent} \\
 \text{For-profit cost of debt} &= (1 - M)(1 - t_c)k_d \\
 &= (1 - 0.08)(1 - 0.22)7.5 \\
 &= 5.38 \text{ percent}
 \end{aligned}$$

The cost of debt is usually available from the for-profit hospital's annual reports. The cost of debt for not-for-profit hospitals is usually lower than that of for-profit hospitals. The reason is that the not-for-profit hospitals use tax-exempt revenue bonds to borrow money from the capital market.

Medicare Reimbursement Under the Prospective Payment System

On October 1, 1983, Medicare started reimbursing hospitals for inpatient non-physician services under a DRG-based prospective payment system (PPS). Several types of hospitals were exempt from DRGs (diagnosis related groups), including psychiatric, rehabilitation, children's, and long-term-care hospitals. About 500 DRGs have been identified from the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). Total payments made to a hospital under Medicare include two components: prospective payment and reasonable cost payment. Prospective payment is further divided into operating payment and capital payment. (Effective October 1, 1992, Medicare began using prospective payments for capital payments. Prior to this date, capital payments were paid on a reasonable cost basis.) Reasonable cost payment includes direct medical education costs, kidney acquisition costs, and some outpatient services.

Each of the DRGs has been assigned a weight to indicate the relative resource requirement to provide the service. For example, DRG 103 (heart transplant) has a weight of 14.0323 and DRG 320 (kidney and urinary tract infection) has a weight of 1.0002. This means that DRG 103 is about fourteen times as expensive as DRG 320. When the Health Care Financing Administration (HCFA) announced a nationwide payment for the labor and nonlabor component of the operating payment, every hospital in the country was preassigned a wage index for the labor component. Reimbursement for a particular DRG is computed as follows:

$$\text{Reimbursement} = \text{DRG weight} \times [(\text{labor amount} \times \text{wage index}) + (\text{nonlabor amount})]$$

The reimbursement may be further increased by an additional payment to cover the costs of indirect medical education, disproportionate share, and outlier payments. Teaching hospitals incur additional costs because of extra laboratory and other teaching demonstrations. The allowance for indirect medical education covers these additional costs. Hospitals that treat a large percentage of Medicaid patients receive an additional payment under PPS. This additional payment is referred to as a disproportionate share payment. The outlier payments are additional payments for patients who use an unusually large amount of resources, indicated by high cost of care.

The capital component of the prospective payment that began on October 1, 1992, had a ten-year phase-in period, blending federal and hospital components of payments. The hospital component of the capital costs includes interest, depreciation, and lease costs. In addition, taxes and insurance are considered capital costs if they are related to capital assets. There is a federal payment for capital costs that is similar to the national rates for labor and nonlabor costs discussed earlier.

Physician Reimbursement Under the Resource-Based Relative Value Scale

Beginning in January, 1992, Medicare started paying physicians using a resource-based relative value scale (RBRVS). Physician services are categorized into approximately 7,000 different codes using the current procedural terminology (CPT). Resource-based relative value (RBRV) has three components: (1) a work unit that represents physician time, level of stress, and skill; (2) a unit of practice expense representing the costs of support personnel and office expense; and (3) a unit of cost that represents the cost of malpractice insurance.

The level of RBRV for a particular CPT code is obtained by adding the products of each of the three components and multiplying the RBRV by a conversion factor, determined by the Health Care Financing Administration each year. The products of the three factors are generated by multiplying the work unit, practice cost expense, and malpractice insurance cost by the regional cost index for each. The regional cost index is based on the difference in costs geographically as well as the inflation rate.

In Exhibit 4.4, Medicare's RBRV reimbursement for an office visit is computed. The physician's level of work depends on the predetermined CPT codes. The example is for a CPT designated "midlevel" office visit (other options would include minimum-level and extensive office visits) for a San Francisco physician in 2000. The \$103.11 reimbursement is significantly less than what the physician charged self-pay or insured patients. For this reason, many physicians limit the number of Medicare

Exhibit 4.4. Physician Reimbursement for an Office Visit

1. Relative Value		
Physician's work (based on CPT code)	1.71	
× Cost index	× 1.068	
Adjusted value		1.826
Practice expense (based on CPT code)	0.78	
× Cost index	× 1.330	
Adjusted value		1.037
Malpractice insurance (based on CPT code)	0.08	
× Cost index	× 0.596	
Adjusted value		0.048
Total value		2.911
2. Conversion factor (determined by HCFA each year)		× 35.42
3. Medicare's office visit reimbursement		\$103.11

patients they accept; too many patients paying below practice costs means they close the practice.

Capitation

The health care industry has experienced a tremendous increase in managed care insurance plans in recent years. These types of plans are expected to have even higher *rates of penetration* (defined as the percentage of population covered by managed care plans) in the future. Managed care plans consisting of health maintenance organizations (HMOs) and preferred provider organizations (PPOs) negotiate with health care providers to arrive at a predetermined price schedule. Many of the negotiations conclude with contracts between the plans and health care providers for a fixed monthly payment per insured individual. Because the providers receive only a fixed amount of revenue from the managed care plans for a given number of insured individuals (known as enrolled members), financial risk of a shortfall in revenues over expenses is shifted from the insurer to the provider. The providers receive their revenue in the form of capitation—a set sum of money received based on membership rather than services delivered, usually expressed in amounts per member per month (PMPM). Under capitation, profit accrues by controlling costs as well as utilization of services. Because revenue is fixed, profit is maximized by either cutting unit cost or controlling utilization of services, or some combination of both. This section discusses several methods of determining the capitation amount in the form of a monthly payment for each enrollee (PMPM). In negotiating the capitation rate, providers typically use the fee-for-service (FFS) rate as the basis of calculation. Specifically:

$$\text{PMPM} = \frac{\text{forecasted annual utilization rate} \times \text{FFS rate}}{12 \text{ months}}$$

Suppose an HMO is negotiating the capitation rate with a hospital for the inpatient care of its members. Past utilization of hospital inpatient services by the enrollees of the HMO show that for every 1,000 enrollees, 350 inpatient days were used in a year and the average charge was \$1,050. Thus, the corresponding PMPM rate is

$$\text{PMPM} = \frac{(350 \text{ inpatient days}/1,000 \text{ members}) \times \$1,050}{12 \text{ months}} = \$30.63$$

Similarly, the capitation rate can be determined for any specific service (i.e., outpatient, dental, surgical, drug, and others). As an example, assume an HMO randomly selected 1,000 of its members to monitor their utilization of inpatient hospital care for medical and surgical services separately, and it found forty admissions for medical services and twenty admissions for surgical services during a one-year period. Assume the length of stay for medical service equals 3.5 days at an average daily cost of \$1,050, and the length of stay for surgical service equals 4.8 days at an average daily cost of \$1,800. Now, the capitation rates for medical and surgical services can be computed as follows:

$$\text{Medical: } \frac{(40 \times 3.5/1,000) \times \$1,050}{12} = \$12.25 \text{ PMPM}$$

$$\text{Surgical: } \frac{(20 \times 4.8/1,000) \times \$1,800}{12} = \$14.40 \text{ PMPM}$$

Hence, the capitation rate for the total hospital inpatient care equals \$12.25 + \$14.40 or \$26.65 PMPM.

Let us now compute the capitation rate for a primary care physician (PCP). Assume the physician's fee for an office visit is \$50. A random sample of 1,000 members of an HMO show a total of 3,500 visits to physicians during a one-year period. That is, on the average, each member has 3.5 visits in a year. Thus, the capitation rate for PCP is:

$$\frac{3.5 \times \$50}{12} = \$14.58 \text{ PMPM}$$

Obviously, the utilization rates for specialists' services is a much smaller number; therefore, the PMPM for such physicians is normally lower than their PCP counterparts. If the fee of a neurosurgeon is \$900 per service and the annual average use of such service is 5 per 1,000 members, then the PMPM for such a specialist is:

$$\frac{5/1,000 \times \$900}{12} = \$0.38 \text{ PMPM}$$

The PMPM rate can be computed for each service and an aggregate PMPM calculated by adding all the services for a comprehensive capitation rate, unless the parties concerned agree on some carve-outs (i.e., to leave some services outside the capitated payments).

The aggregate capitated amount is then adjusted for the cost of reinsurance, cost of administration, and margin. The final amount is risk adjusted for age, gender, and family status.

Medicare is now experimenting with capitated payment by contracting with federally approved HMOs in many states for the health care services of a defined population of Medicare enrollees in a market. Under the contract, HMOs receive a fixed amount of payment from the Health Care Financing Administration for each Medicare enrollee in each month. The HMO is responsible for all the Medicare approved health care services for the enrolled members. The Medicare PMPM is based on the adjusted average per capita cost (AAPCC) of the Medicare patients in the county of the HMO location. The actual expenses of this population (as paid by HCFA in the previous time period on the DRG-based system) are adjusted for age, gender, welfare status, and geographic location of the enrollees to compute the AAPCC.

Medicare's Reimbursements for Outpatient Services

On June 1, 2000, Medicare began reimbursing outpatient care by hospitals using its ambulatory payment classification (APC) system. The classification of services is based on current procedures terminology (CPT) codes and the HCFA common procedure coding system (HCPCS). The payments are determined on a prospective basis by HCFA. An APC payment is supposed to cover the cost of equipment, supplies, and drugs, in addition to the cost of professional time measured in relative value units (RVU). This system of reimbursement replaced the traditional cost-based and fee-for-service system for outpatient services.

Medicare's Reimbursements for Skilled Nursing Facilities

Under the Balanced Budget Act (BBA) of 1997, Medicare began reimbursing skilled nursing facilities (SNFs) based on resource utilization groups (RUGs). SNF patients are classified into one of forty-four resource utilization groups to reflect the level of resources required to treat patients. The RUG system determines a per diem rate for each patient for reimbursement by Medicare.

Conclusion

This chapter provides an introduction to thinking financially in the context of health care organizations. Financial analysis is not widely used in the management and leadership of public health programs, often placing public health agencies at a competitive disadvantage. Used creatively and adapted to the public health context, the methods presented in this chapter not only make public health leaders more effective competitors for the limited financial resources that fund public sector programs but also improve the overall financial performance of the public health sector. Some of the cases in this book present financial issues whose analysis will benefit from use of these methods. Public health leaders need to practice making the critical leadership judgments that guide the allocation of financial resources to protect and improve the public's health.

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