CHAPTER 41

Financial planning and management

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SUMMARY

Effective financial planning and management are vital for the successful generation, safekeeping, and use of funds to achieve program objectives.

Many government budgeting and accounting systems operate on a cash basis, recording a transaction only when cash is involved. Private-sector or semi-autonomous government programs, including many revolving drug funds (RDFs), use an accrual system, which also records non-cash transactions such as medicines issued. Public-sector managers can complement government accounting systems with elements of an accrual system to support more effective and efficient program management.

Long-range financial plans include projections of funding and expenditures over several years and thus facilitate long-range planning for health services. For an RDF, a long-range plan can project the point in the future when revenues from medicine sales will be sufficient to cover medicine program expenses. The realization of projected revenues depends on the development and implementation of detailed pricing strategies for medicines.

The first-year figures from a "rolling" long-range plan provide the basis for an annual budget, which is used to plan and control spending for the current year. Whereas government budgets may be based on fixed funding, an RDF budget is flexible, with the level of expenditure dependent on sales revenue. A cash flow forecast helps ensure the availability of sufficient cash to cover anticipated obligations each month. Cost analysis is used to measure program efficiency and to help set prices.

Principles for effective financial control include—

- Dividing duties among different individuals
- Regulating transactions through the use of written procedures, budgets, and purchase-request systems
- Recording and monitoring all transactions
- Instituting both random and scheduled third-party auditing

The accounting system should produce the following standard reports on a monthly and annual basis—

- Budget performance report
- Income and expense statement
- Cost-center expense reports
- Balance sheet
- Summary of accounts payable and receivable

41.1 Introduction

Government allocations continue to be a major source of financing for pharmaceutical supply in many countries. Although ministries of finance and of planning (see Chapter 11) traditionally have made public-expenditure decisions, program managers can often lobby for more funding for their programs and activities. They are better able to do so if they understand the issues involved in public-sector resource allocation, can argue effectively for greater investments in health, and can demonstrate responsible and efficient use of existing resources. However, the trend in many resource-limited countries has been to decentralize health services, including pharmaceutical management. In a decentralized environment, local governments and health facilities become more responsible for managing services and mobilizing resources, with the role of the central government focusing more on regulation.

With public financing of pharmaceutical supply, managers of pharmaceutical programs are responsible for ensuring that resources are used in the best way possible, with the goal of achieving program objectives. Financial management is vital to this role. Managers need to plan, control, and monitor the generation, safekeeping, and use of funds, and they must be able to provide appropriate financial reports to government authorities and donors. This chapter is designed to provide managers with a working knowledge of key financial management concepts and skills.

Pharmaceutical programs generally define their objectives in terms of services provided. However, financial objectives are becoming increasingly important as programs try to maintain or expand services, often in the face of reduced funding. Programs need to seek increased government and donor funding, generate additional revenues from cost sharing, and be efficient and cost-effective in providing services. To achieve these objectives, program managers must be able to—

- Prepare long-range plans to project the need for services, devise the most cost-effective way of providing them, outline the resources needed, and help secure government and donor funding
- Prepare and communicate program policies and procedures
- Set sales prices that are affordable, competitive, and meet program cost-sharing goals (discussed in Chapter 9)
- Prepare and use budgets to plan and contain expenses

- Prepare cash flow forecasts to ensure the availability of cash to cover anticipated financial obligations
- Analyze costs to assess cost-effectiveness and monitor efficiency
- Control and manage the collection, safekeeping, and spending of funds
- Keep proper accounting records and prepare reports for management, government, and donors

Public-sector financial management systems, as traditionally designed, are often less than ideal for managing pharmaceutical programs—especially with regard to collection of sales revenue, which is often a new and unfamiliar task for government ministries. Given such limitations, managers of government programs may need to develop and use complementary systems to help them manage their resources effectively. New directions in public health–sector management also include decentralizing health care services, and adapting the traditional central medical store (CMS)—traditionally operated as part of the ministry of health—to serve as an autonomous or semi-autonomous supply organization operating on a commercial, but nonprofit, basis (see Chapter 8). In addition, governments more often incorporate private-sector options in pharmaceutical supply management, such as contracting out specific services, which must be accounted for within the budgeting and financial planning system.

This chapter describes both how to get the best results with existing government financial management systems and how to develop complementary procedures to enhance efficiency. A system that combines both approaches should provide a good basis for effective financial management. The chapter presents sample budgets and reports based on the hypothetical case of a government pharmaceutical program that is beginning to sell and account for medicines, as in an autonomous revolving drug fund (see Chapter 13). These examples are each inter-related, and the figures can therefore be followed from one to another.

41.2 Getting the best from a government finance system

In recent years, many government departments have begun to follow the private-sector principle of demonstrating "value for money" through the effective and efficient use of resources. They have often been hampered, however, by the limitations of budgeting and accounting systems designed only to control spending. In addition, a changing public-sector environment, featuring health care reforms such as decentralized responsibilities and autonomous management, greatly affects how a country carries out its health-sector financial management.

For example, vertical health programs that focus on targeted health interventions, such as HIV/AIDS or tuberculosis control, are usually financed by donors and operate in parallel to the government pharmaceutical supply system. Governments have recognized the inherent inefficiency in this parallel system and have made integrating vertical health programs into the government system a priority

Country Study 41-1
Negotiating prices for services to vertical programs in East Africa

A revolving drug fund frequently subsidizes vertical health programs when they operate in parallel. Often, storage space and other resources consumed by vertical programs are 50 percent of the total, whereas they pay only a minimal fee for those services. For example, in the recent experience of a national central medical store (CMS) revolving drug fund in East Africa, vertical programs used 60 percent of storage space but paid fees of only 6 to 10 percent of the value of their supplies to the CMS. This situation meant that on the remaining 40 percent of activities, the CMS had to charge a 50 percent markup to cover costs.

Vertical programs often deliver supplies to the CMS without giving distribution details, resulting in supplies that take up space for months or years. A monthly storage-fee invoice to the vertical programs should help alleviate this practice. Also, vertical programs should meet the full cost of disposing of their expired stock. To avoid the inequalities between resources used by vertical programs and what they pay for those resources, the CMS needs to negotiate a realistic memorandum of understanding (MOU) with the vertical health programs, supported by reliable, up-to-date activity costs for the following—

- Procurement
- Clearing and forwarding
- Storage
- Distribution
- Disposal of expired stock

The MOU should be based on vertical program contributions to the CMS that are relative to the resources they consume, and the charges must be specified in detail.

Source: Rational Pharmaceutical Management Plus Program/ Management Sciences for Health.

objective. Resource-intensive functions such as procurement, quality assurance, storage, and physical distribution may be integrated under the essential medicines program, whereas financing, quantification, and monitoring may stay under the control of the vertical program. Progress on integration has been mixed. In some cases, cost savings and efficiency gains have been higher than anticipated, but frequently, integrating health programs has been restricted by program-level resistance and perceived weaknesses in government management of the system. Integration can provide savings and benefits, but is reliant on strong government commitment to the process and the willingness of programs to give up some or all of their activities (see Country Study 41-1).

Government pharmaceutical programs generally suffer from the same problem: the accounting system keeps track of expenditures for pharmaceutical procurement, but it does not record the value of medicines distributed or lost. The main problem is usually that the government accounting system operates on a cash basis, recording a transaction only when cash is received or spent. Under such a system, medicines purchased on credit are not recorded in the accounting records until payment is made, and medicine issues are not recorded at all if cash is not received. A cash-based system does not record donated medicines or equipment, medicines issued free of charge, medicine losses, purchases and sales on credit, accounts receivable, accounts payable, or depreciation, nor does it maintain an accounting record of the stock of medicines. Without such information, managing a program properly is almost impossible.

A private-sector program, or a semi-autonomous government program such as an RDF, is more likely to use an accrual-basis accounting system. Such a system records all transactions at the time they are made. For example, a purchase of pharmaceuticals on credit is recorded when the products are received, increasing the balance in the pharmaceutical stock account and creating a liability to the supplier. When the supplier is paid, the liability is canceled and the cash balance is reduced. All noncash transactions, such as donations of medicines, depreciation, and stock write-offs, are also recorded.

Figure 41-1 compares a traditional government budget (cash basis) with an RDF budget (accrual basis). The two budgets are based on the same events, except that the RDF budget includes noncash transactions. The government budget for 2005 shows pharmaceutical purchases of 230,000 U.S. dollars (USD) as an input to the system but shows no figure for services delivered as an output. The RDF budget, however, shows the projected cost of pharmaceuticals issued (USD 250,000) as a measure of program output; the USD 230,000 of pharmaceutical purchases is recorded in a separate pharmaceutical stock account.

Unlike the government budget, the RDF budget also takes into account the value of income received from vertical programs, the cost of expired or lost medicines, and depreciation of fixed assets. In the government cash budget, for example, operating income is shown as USD 260,000 (based on a government allocation of USD 135,000 plus projected sales revenue of USD 125,000), which will be used to purchase pharmaceuticals valued at USD 230,000 and to pay expenses of USD 30,000. Total operating income in the RDF budget, however, includes income received from services provided through vertical programs (USD 185,000) and sales revenue of USD 125,000, for a total of USD 310,000; this operating income will be used to distribute USD 250,000 worth of medicines (cost of medicines issued), cover stock losses of USD 12,500 (cost of expired medicines), pay operating expenses of USD 30,000, fund depreciation of USD 10,000, and generate an operating surplus (income less expenses) of USD 7,500. The assets that represent that surplus and the reserve of USD 10,000 for depreciation appear as an increase of USD 17,500 in pharmaceutical stock from the previous year (see closing balance in the pharmaceutical stock account in Figure 41-1).

Note also that the format of the RDF budget provides more useful management information by grouping categories; for example, showing the deficit created by buying and selling the medicines in the pharmaceutical account. In both the government and the RDF formats, the actual income and expenses for the previous year are shown next to the budget figures for comparison.

When possible, an accrual basis (which recognizes receivables and payables without a cash exchange) should always be used. However, if a cash basis must be used because of government rules, elements of an accrual system should be used to complement the government accounting figures and provide more complete information. Priority should be given to those elements that, when adjusted, would have the greatest effect on the overall figures. The most important element is generally maintaining complete accounts for pharmaceutical transactions.

In order to track pharmaceutical transactions on an accrual basis, accounts should be opened for stock, accounts payable, and accounts receivable. This double-entry system reflects each transaction in two accounts. The pharmaceutical stock account starts with the stock balance and all subsequent pharmaceutical transactions are reflected in the account, so that at any given time the balance reflects the value of stock on hand. Medicines bought on credit increase the stock balance in the stock account and create a liability in accounts payable. Medicines received as donations (valued at the equivalent local cost) increase the stock balance in the stock account and are credited to a donations-in-kind account. The cost of lost, damaged, or expired medicines reduces the stock balance in the stock account and is debited to a medicine losses account. The cost of pharmaceuticals issued or sold reduces the stock balance in the stock account and is debited to

Figure 41-1 Comparison of traditional government and RDF budgets

CENTRAL MEDICAL STORES
Traditional Government Budget (Cash Basis)

	Latest Estimate 2004*	Budget 2005
RECURRENT BUDGET		
EXPENDITURES		
Salaries	*18,000*	19,000
Vehicle operations	*2,500*	2,700
Other transport	*1,500*	1,600
Packaging and labeling	*3,000*	3,300
Utilities	*2,000*	2,200
Office supplies	*1,000*	1,200
Pharmaceutical purchases	*160,000*	230,000
GROSS EXPENDITURES	*188,000*	260,000
APPROPRIATIONS IN AID		
Sales revenue	*0*	125,000
NET EXPENDITURES	*188,000*	135,000
(Government allocation)		
CAPITAL BUDGET		
Equipment	*5,000*	10,000
Other transport	*1,500*	1,600

CENTRAL MEDICAL STORES
Revolving Drug Fund (Accrual Basis)

	Latest Estimate 2004*	Budget 2005
OPERATING BUDGET		
INCOME FROM VERTICAL PROGRAMS		
Procurement	*25,740*	16,650
Clearing and forwarding	*51,480*	33,300
Storage	*57,200*	37,000
Distribution	*151,580*	98,050
Total income (A)	*286,000*	185,000
PHARMACEUTICAL ACCOUNT		
Sales revenue	*0*	125,000
Less cost of medicines issued	*240,000*	250,000
	(240,000)	(125,000)
Less cost of expired medicines, etc.	*15,000*	12,500
Surplus/deficit on pharmaceutical account (B)	*(255,000)*	(137,500)
EXPENSES		
Salaries	*18,000*	19,000
Vehicle operations	*2,500*	2,700
Other transport	*1,500*	1,600
Packaging and labeling	*3,000*	3,300
Utilities	*2,000*	2,200
Office supplies	*1,000*	1,200
Total operating expenditures	*28,000*	30,000
Depreciation	*0*	10,000
Total expenses (C)	*28,000*	40,000
INCOME LESS EXPENSES (A + B – C)	*3,000*	7,500
CAPITAL BUDGET		
Equipment	*5,000*	10,000
PATIENT VOLUME	*520,000*	500,000
PHARMACEUTICAL STOCK ACCOUNT	*2004*	2005
Opening balance	*85,000*	88,000
Purchases	*160,000*	230,000
Donations	*98,000*	50,000
	343,000	368,000
Less cost of issues	*240,000*	250,000
Less medicine losses	*15,000*	12,500
Closing balance	*88,000*	105,500

* Because the budget must usually be completed before the end of the current year, a latest estimate of the current year is made for comparison purposes. The latest estimate for the current year is typically compiled from actual figures for the first nine months and a revised estimate for the last three months.

a cost-of-medicines-issued or cost-of-sales account. All transactions are valued at the purchase cost, and the balance in the stock account therefore equals the cost of stock on hand. An average cost should be used in the stock account for items purchased from multiple suppliers at different prices or from the same supplier at different times and for donated goods. Sales prices are normally based on these average costs. Also, stock in transit and in quarantine should be identified separately from stock on hand to avoid overstatement of availability.

Although the cost of expired medicines is often a small percentage of the total budget, the cost of disposing of expired and damaged pharmaceuticals can be enormous because of regulatory requirements and lack of disposal facilities. In addition, there is usually a hidden—but substantial—cost for storing expired medicines. Government regulations often fail to recognize medicine expiry as an integral part of pharmaceutical management; for example, the same regulations authorize writing off medicine expiry as writing off other losses (such as truck tires). Also, RDFs frequently do not include an allocation for the physical disposal of expired medicines. In such circumstances, disposal of expired medicines often has very low priority, and expired stock tends to accumulate in the storage area for months or even years. As a result, if storage is limited, it may become necessary to rent additional space to accommodate new supplies.

The cost of pharmaceuticals issued can be calculated by recording the cost of each medicine at the time of issue, but this procedure usually requires a computerized inventory system. The figure can be calculated manually, however, by adding the cost of pharmaceuticals purchased and donated to the cost of the opening pharmaceutical stock and deducting the cost of the closing pharmaceutical stock. Provided that the same method is used to value both opening and closing stocks, the resulting figure represents the cost of medicines used plus the cost of expired, missing, and damaged medicines.

The other adjustments that can be made to produce an accrual-based report from a government account relate to depreciation and operating expenses. However, because a government usually replaces fixed assets through capital budgets, these adjustments are probably not worth making unless the program will have to replace assets from self-generated resources in the future. Also, bringing operating expenses, such as salaries or electricity, onto an accrual basis may not be worthwhile if the amounts are relatively small and the expenses are paid on a regular basis.

The remaining sections of this chapter describe other elements of good financial management that should be in place, whether a program is governmental or autonomous. Some of these elements relate to the planning and management of sales revenues, which apply only to those programs that currently sell pharmaceuticals or plan to in the future.

41.3 Long-range financial planning

It is important to have a long-range view of both program objectives and activities and the resources needed to carry them out. A long-range plan for any program must include a realistic financial plan showing what funding is anticipated and how it will be spent. Without a financial plan, unachievable objectives may be set. A long-range plan might cover five years and should be a "rolling" plan—updated each year for a new five-year period beginning with the current year. The plan is broken down to show what activities will be carried out each year, as well as each year's estimated funding and expenditures. Program planning and financial planning are inseparable, and both program and financial managers must be involved in developing the financial plan.

A long-range plan is just as necessary for a grant-funded pharmaceutical program as it is for an RDF. With a grant-funded program, a long-range plan attempts to forecast services based on estimated levels of fixed funding and, at the same time, to justify additional funding. With an RDF, it is a plan for both revenue generation and services, with each being completely dependent on the other. Often, a program is funded through a mixture of grant and revenue monies. For example, administration could be covered by a grant, whereas the purchase of medicines is funded from revenue. With decentralization, funding usually goes to the health facilities to buy supplies from the CMS. Often, sales prices must cover all operating expenses and capital expenditures. Donors may finance some capital expenditures.

In summary, long-range financial planning is important because it results in—

- A documented summary of results compared with the previous year's plans and objectives
- An assessment of resources required for necessary services
- A review of the financial feasibility of plans and a determination of whether more funds will be needed or activities will have to be reduced
- A plan for long-term resource generation and investment
- Greater ability to seek funding successfully
- Prioritization of essential program activities
- A plan to obtain resources when they are needed
- A tool that can be used to set periodic programmatic and financial benchmarks

Figure 41-2 shows an example of a long-range financial plan for a grant-funded government pharmaceutical program that is to be converted to a revenue-funded RDF over a three-year period. The structure of the plan serves both types of program equally well. All long-range financial plans must build in a factor for annual inflation, as this example does. For expenditures on imported goods, changes in exchange rates

Figure 41-2 Five-year financial plan

CENTRAL MEDICAL STORE
Five-Year Financial Plan 2009–14
OPERATING STATEMENT (USD)

	2009		2010		2011		2012		2013		2014	
	Actual	**%**	**Planned**	**%**	**Planned**	**%**	**Planned**	**%**	**Planned**	**%**	**Planned**	**%**
SALES												
Medicines	805,000	81.0	901,600	81.3	1,000,800	83.0	1,180,900	83.4	1,393,500	83.7	1,644,300	84.1
Equipment	189,000	19.0	207,900	18.7	205,000	17.0	235,800	16.6	271,100	16.3	311,800	15.9
TOTAL SALES	994,000	100.0	1,109,500	100.0	1,205,800	100.0	1,416,700	100.0	1,664,600	100.0	1,956,100	100.0
Less: Cost of goods sold*	825,000	83.0	930,000	83.8	1,016,900	84.3	1,211,800	85.5	1,430,000	85.9	1,698,000	86.8
Less: Cost of expired medicines, etc.	12,400	1.2	9,800	0.9	9,900	0.8	8,000	0.6	8,500	0.5	9,600	0.5
GROSS MARGIN	156,600	15.8	169,700	15.3	179,000	14.8	196,900	13.9	226,100	13.6	248,500	12.7
Other income	19,800	2.0	22,200	2.0	24,900	2.1	31,200	2.2	43,000	2.6	53,500	2.7
	176,400	17.8	191,900	17.3	203,900	16.9	228,100	16.1	269,100	16.2	302,000	15.4
Less: Packing materials	5,000	0.5	5,000	0.5	7,800	0.6	8,800	0.6	9,900	0.6	12,000	0.6
Less: Distribution costs	34,800	3.5	38,800	3.5	41,200	3.4	49,000	3.5	56,000	3.4	68,900	3.5
CONTRIBUTION	136,600	13.8	148,100	13.3	154,900	12.8	170,300	12.0	203,200	12.2	221,100	11.3
GENERAL EXPENSES												
Personnel	69,700	7.0	74,000	6.7	79,600	6.6	89,000	6.3	98,000	5.9	107,000	5.5
Board of trustees	1,300	0.1	1,600	0.1	2,400	0.2	2,600	0.2	3,000	0.2	3,400	0.2
Training & recruitment	3,500	0.4	3,600	0.3	4,100	0.3	4,500	0.3	5,200	0.3	5,800	0.3
Services & utilities	17,900	1.8	19,500	1.8	20,100	1.7	21,500	1.5	24,900	1.5	27,000	1.4
Office & general	16,900	1.7	18,300	1.6	19,500	1.6	22,000	1.6	25,600	1.5	28,900	1.5
Depreciation	19,900	2.0	22,500	2.0	23,200	1.9	24,900	1.8	32,000	1.9	47,000	2.4
TOTAL GENERAL EXPENSES	129,200	13.0	139,500	12.6	148,900	12.3	164,500	11.6	188,700	11.3	219,100	11.2
NET OPERATING RESULT	7,600	0.8	8,600	0.8	6,000	0.5	5,800	0.4	14,500	0.9	2,000	0.1
CAPITAL PLAN												
Buildings	0		0		1,500		4,500		9,200		8,500	
Vehicles	6,000		3,000		0		3,000		4,800		4,800	
Equipment	2,300		3,600		1,400		1,600		2,100		3,300	
TOTAL	8,300		6,600		2,900		9,100		16,100		16,600	
FUNDING												
Revolving fund	2,300		3,600		2,900		4,300		6,800		8,500	
Donors	6,000		3,000				4,800		9,300		8,100	
TOTAL	8,300		6,600		2,900		9,100		16,100		16,600	

* Cost of goods sold is expected to increase with volume from additional facilities served by the CMS and with inflation—estimated at 5 percent annually.

over time must be considered as well. Box 41-1 gives further details on adjusting for price levels and exchange rates.

The long-range financial plan shown in Figure 41-2 projects increased year-to-year sale of medicines. The price markup is calculated to cover all costs (including cost of medicines, packing, distribution, medicine expiry, and general expenses) and leave a nominal net operating profit. To meet nonprofit criteria, the net profit would normally not exceed 1 percent of sales revenues. Although general operating expenses will increase over time, the rate of increase should be less than the growth in sales revenue because administrative costs are composed of fixed or semivariable components. For example, whereas personnel costs increase from USD 69,700 in 2009 to USD 107,000 in 2014, the percentage of personnel costs in relation to sales falls from 7.0 percent in 2009 to 5.5 percent in 2014. By limiting the increase in general expenses to a rate below the increase in sales, the CMS can progressively reduce the gross margin charged (from 15.8 percent in 2009 to 12.7 percent in 2014) and increase the percentage of revenues spent on pharmaceutical supplies (cost of goods sold) from 83.0 percent in 2009 to 86.8 percent in 2014.

Box 41-1
Adjusting for price levels and exchange rates

Any comparison of funding amounts at different points in time requires consideration of the possible effect of inflation and changes in the exchange rate. Such situations include budgeting and forecasting future expenditure needs, pricing in revolving drug funds, and analyzing expenditure trends.

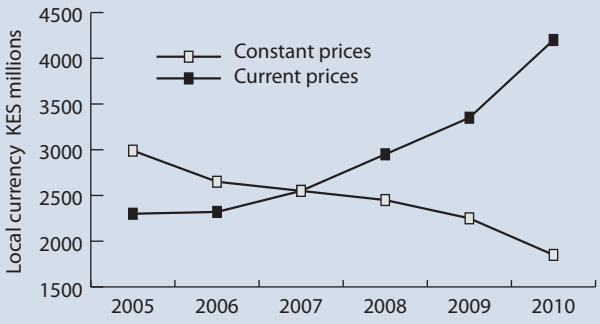
Inflation

Inflation can arise when the cost of imported goods rises because of rising world prices or exchange rate depreciation. Inflation also arises when the growth in a country's expenditure or consumption of goods and services exceeds the growth in its supply or production of goods and services.

Changes in the price level make the comparison of expenditures in different years more complicated: the purchasing power of a given budget depends on the price level during that year. Expenditures that are not adjusted to account for changes in the price level are called nominal or current-price expenditures; when they are adjusted to reflect changes in the price level, they are called real or constant-price expenditures. To compare expenditures in different years, they can be translated into the same "price units" using a gross domestic product (GDP) deflator series, which is usually available from the ministry of economic planning or another central government agency. In these series, one year is chosen as the base year, and other years are expressed as values relative to the base year.

The accompanying figure shows the evolution of health expenditures in an illustrative country, Kenya, over time, in both current prices and constant prices. Using current prices, expenditures appear to increase from 2005 to 2010. However, when expenditures are translated into constant dollars, in this case using 2007 as the base year, it becomes clear that the real value of expenditures has actually fallen from 3,000 million of the local currency in 2005–06 to 1,800 million in 2009–10.

Health expenditures, Kenya, 2005–2010 (current and constant prices)



Exchange rates

The exchange rate is the price of foreign currency that equalizes the balance of payments. It is the price at which the inflow of foreign currency from exports and foreign aid is equal to the demand for foreign currency to purchase imports. The exchange rate may be fixed (determined by the government) or flexible (determined in foreign exchange markets).

Changes in the exchange rate over time can make expenditure projections more complicated when a significant proportion of total expenditures is on imported goods (such as medicines). That is often the case in countries undergoing structural adjustment, where the exchange rate may be experiencing large, somewhat unpredictable changes. In those circumstances, it is often useful to separate the local currency and foreign currency items in the budget, so that the foreign currency costs can be updated more easily in response to new information. The ministry of health or planning may be able to provide assistance in making projections about the exchange rate.

41.4 Costing

Cost analysis is an important management tool that allows managers to measure the efficiency of their programs and price products and services equitably to their clients. Efficiency can be understood as getting the most output for a given quantity of resources (for example, purchasing more pharmaceuticals with a constant budget) or achieving a given level of output at minimum cost (such as treating a bacterial infection at lowest cost). Efficiency concepts are discussed in more detail in Chapter 10. By determining the cost of each unit of output (which, in a pharmaceutical supply system, is the cost of medicines and services provided), managers can evaluate the efficiency of their programs over time or make comparisons with other organizations. Cost figures can also be used to estimate the financial effect of serving various patient volumes, different patient types, or different disease types, as well as to set prices. Total cost analysis is a good tool for assessing all costs in an entire pharmaceutical system (Chapter 40).

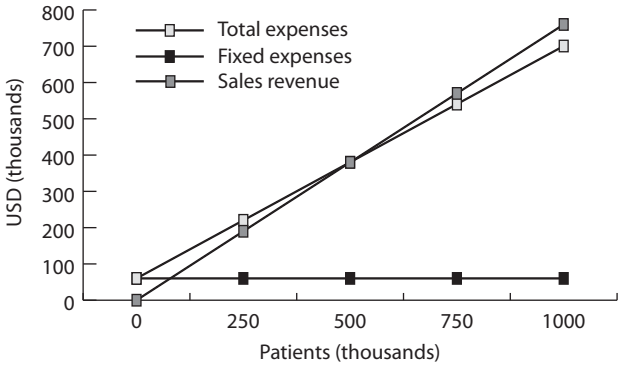
The starting place in determining medicine costs is the original purchase price of each medicine. Price varies over time, depending on the supplier, the date of purchase, the unit of purchase, and the volume of purchase. The costing method depends on the purpose of the exercise: an average cost can be used for making comparisons, and the cost of the most recent purchase should be used for setting a sales price. If significant transport costs are involved for imported medicines, they should be added to the purchase cost of the particular medicines supplied.

Other costs, including the transport charges for in-country distribution, are best allocated evenly over the total number of dispensing outlets, particularly if the cost information is used to set prices. Adding high transport costs to the cost of medicines sent to remote places is not equitable, especially because the patients in those areas are often poor.

If the total operating costs of the pharmaceutical supply system amount to 10 percent of the total cost of the medicines distributed, the total cost of each medicine is its purchase price plus its in-country transport costs (for imported medicines) plus 10 percent. A charge for depreciation, expiry, and obsolescence losses should be included in the total.

If medicines are being repackaged, the cost of such procedures may be attributed to the specific medicines as direct costs. However, if the overall costs are low (say, less than 10 percent of the total medicine costs), allocating them to individual medicine prices may not be worthwhile because such costing can be complicated and lengthy. Donated resources should be included at the equivalent local cost so that the full cost of each medicine is calculated. Finally, for costing and pricing to work properly, the accounting system should be on an accrual basis, or all bills must be paid promptly; otherwise, cost calculations will not be accurate.

Figure 41-3 Break-even analysis: 2004 prices for different volumes



Sales revenue	0	190,000	380,000	570,000	760,000
Cost of medicines issued	0	152,500	305,000	457,500	610,000
Cost of expired medicines	0	7,625	15,250	22,875	30,500
Variable expenses	0	160,125	320,250	480,375	640,500
Operating expenses (fixed expenses)	60,100	60,100	60,100	60,100	60,100
Total expenses	60,100	220,225	380,350	540,475	700,600
Number of patients	0	250,000	500,000	750,000	1,000,000

Note: Break-even point is where number of patients is approximately 500,000.

Figure 41-2 shows that certain costs are direct and others indirect. *Direct costs* are those that can be attributed directly to the items being costed (for instance, the purchase price of the medicine). *Indirect costs* are those that cannot be attributed directly, such as medicine losses and general operating expenses. The easiest way to allocate indirect costs is to treat them as percentage additions to the direct cost of each medicine.

Costs are often divided into fixed (predictable) and variable (incremental) costs (Chapter 40). Rent for a warehouse would be a fixed cost, because it would not vary with the quantity of pharmaceuticals held. Packing materials would be a variable cost, because materials needed vary directly with the quantity of medicines issued. This division between fixed and variable costs is useful when determining the break-even point (the production or service volume at which sales revenue equals expenses). Figure 41-3 shows a graph of the revenue and expenses with various patient volumes, using 2004 prices and expenses. Sales prices set must be sufficient to cover the fixed and variable costs, as well as the need for reserves, at the expected volume of sales. In the figure, this point is achieved with a volume of about 500,000 patients.

In practice, many costs are semivariable; this factor should be taken into account when using break-even analysis data. Salaries are an example of a semivariable cost. With increasing activity, additional staff will probably be needed, but unlike the proportional cost increase shown in Figure 41-3, the increase in staff costs should be considerably less than the increase in patient volumes. Even warehouse rents are not always a fixed cost. Often, as product volumes increase, they can be accommodated in the existing warehouse, but when the warehouse is full, additional volume can only be accommodated by renting more warehouse space.

41.5 Setting prices for pharmaceutical sales and services provided

The development and implementation of detailed pricing strategies are key to realizing the projected revenues from pharmaceutical sales that are part of a long-range financial plan.

Building on the long-range plan shown in Figure 41-2, Figure 41-4 presents an example of price setting to achieve the pharmaceutical sales revenue of USD 457,531 projected for 2005. The example is simplified—including only four medicines and two geographic regions—but it shows how prices can be set based on each medicine's cost. The example is for the year in which sales revenue is projected to exceed total expenses in the five-year plan. In this analysis, net sales revenue of USD 457,531 is shown under (3) Summary Forecast. Gross sales revenue is projected at USD 481,688, with an anticipated total volume of social discounts or waivers valued at USD 24,157.

Projected purchase costs for each medicine, together with total operating costs, determine the medicines' full cost. Pharmaceutical sales prices are then established, based on these total costs, with various markups added and adjustments made as necessary to achieve a program's social as well as financial objectives. Adjustments for social discounts and regional equity should take into account willingness and ability to pay. If pharmaceutical use estimates are available by region, revenue contributions by medicine and by region can be calculated. Price adjustments are then made as needed to ensure that the sum of revenue contributions will equal the overall projected sales revenue. For example, in Figure 41-2, the 2005 figures have been produced by forecasting sales, other income, cost of sales, packing expenses, distribution expenses, and general costs, which together produce a small operating surplus (net operating result) of USD 8,600. Perhaps several drafts of the financial plan were necessary to achieve an acceptable operating result within revenue and cost parameters. For pricing purposes, the focus should be on the USD 930,000 cost of goods sold. The gross-margin target is USD 169,700 plus the expired medicine cost of USD 9,800, for a total of USD 179,500. The markup needed to earn USD 179,500 on cost of sales of USD 930,000 is 19.3 percent. So the default pricing markup for 2005 should be 19.3 percent. Pricing for RDFs is discussed in more detail in Chapter 13.

41.6 Budgeting

In addition to a long-range financial plan, it is necessary to have a detailed budget to plan and control spending for the current year. An annual budget should be based on the first-year figures from the current rolling long-range financial plan and should reflect the activities programmed for the year.

The budgeting process must begin well before the start of the year, because it takes time for budgets to be approved. Approving government budgets, in particular, can be a lengthy process, where a predetermined schedule exists for submitting a draft budget to the ministry of health, which then forwards the budget to the ministry of finance. If the budgeting is decentralized, the process will take even longer and will have to start earlier.

The budget should show funding sources as well as expenses. A grant-funded government budget is a fixed budget, or a zero-balance budget, where funding is known and the objective is to make sure that expenditures do not exceed the funding level. If any income comes from sales revenue, the budget is flexible, since the level of expenditure will depend on the level of income.

Budget detail

All the resources to be obtained should be shown in the budget, including resources that are to be donated, so that the budget reflects the total resources needed to carry out planned activities. Separate budgets are prepared for operating (recurrent) funds and capital (development) funds.

The operating budget covers the cost of all items consumed during the year, including salaries, allowances, medicines, transport, travel, postage, telephone, office supplies, heat, electricity, water, and office rent. Any donated items, such as medicines or office supplies, should be shown and identified in relation to a specific funding source. When assets are to be replaced from sales revenue, depreciation should be included here as an expense.

The capital budget must show all land and buildings to be bought or built, as well as vehicles and equipment to be purchased. All assets that have a long life (more than one year) or a significant value should be included. The definitions of life and value should be in accordance with government regulations or with current accounting standards, if not covered by regulations. A donated item, such as a vehicle, should be shown in the capital budget and identified in relation to a specific funding source.

Figure 41-4 2005 price structure and forecast

CENTRAL MEDICAL STORES REVOLVING DRUG FUND
2005 Price Structure and Forecast

(1) PRICE STRUCTURE	Drug 1	Drug 2	Drug 3	Drug 4
A Purchase price[a]	1.00	2.00	3.00	4.00
B Inward freight, duty, etc.[b]	0.05	0.00	0.15	0.20
C Direct cost	1.05	2.00	3.15	4.20
D Stock losses[c] (C x 5.00%)	0.05	0.10	0.16	0.21
E Overhead expenses[c] (C x 16.42%)	0.17	0.33	0.52	0.69
F Full cost	1.27	2.43	3.83	5.10
G Stock replenishment reserve[c] (C x 2.00%)	0.02	0.04	0.06	0.08
H Profit [c, d] (C x 1.61%)	0.02	0.03	0.05	0.07
I Standard price	1.31	2.50	3.94	5.25
J Drug use policy adjustment[e]	0.13	-0.25	0.43	-0.42
K Adjusted price	1.44	2.25	4.37	4.83
L Markup to cover social discount[f] (C x 6.60%)	0.07	0.13	0.21	0.28
	1.51	2.38	4.58	5.11
Regional equity adjustment				
Adjusted regional price, Region 1[g]	1.21	1.91	3.66	4.09
Adjusted regional price, Region 2[g]	1.66	2.62	5.04	5.62

(2) FORECASTED REVENUE BY MEDICINE AND BY REGION	Drug 1	Drug 2	Drug 3	Drug 4	Total
Sales volume					
Expected number of units sold, Region 1	14,070	12,665	12,665	9,999	49,399
Expected number of units sold, Region 2	28,144	25,335	25,335	20,001	98,815
Expected number of units sold, total	42,214	38,000	38,000	30,000	148,214
Revenue contribution by medicine					
Cost of medicines issued	42,214	76,000	114,000	120,000	352,214
Inward freight, duty, etc.	2,111	0	5,700	6,000	13,811
Direct cost	44,325	76,000	119,700	126,000	366,025
Stock losses	2,216	3,800	5,985	6,300	18,301
Overhead expenses	7,278	12,479	19,654	20,689	60,100
Total cost	53,819	92,279	145,339	152,989	444,426
Stock replacement reserve	886	1,520	2,394	2,520	7,320
Profit	713	1,222	1,925	2,026	5,886
Net sales revenue	55,418	95,021	149,658	157,535	457,632
Medicine use policy adjustment	5,542	(9,502)	16,462	(12,603)	(101)
	60,960	85,519	166,120	144,932	457,531
Markup to cover social discount	2,925	5,016	7,900	8,316	24,157
Gross sales revenue	63,885	90,535	174,020	153,248	481,688
Regional equity adjustment					
Adjusted sales revenue, Region 1	17,034	24,140	46,401	40,862	128,437
Adjusted sales revenue, Region 2	46,852	66,396	127,621	112,387	353,256
Total	63,886	90,536	174,022	153,249	481,693

(3) SUMMARY FORECAST	% of Cost	Income & Exps
Sales revenue		481,688
Less social discounts	6.60	24,157
Net sales revenue		457,531
Cost of medicines issued		366,025
		91,506
Less: stock losses	5.00	18,301
Gross profit		73,205
Less: overhead expenses	16.42	60,100
Operating profit	3.58	13,105
Less: stock replacement reserve	2.00	7,320
Net profit		5,785

Notes: In a decentralized program, the field programs would use the sales price of the central program as the purchase price for their program. The other costs added to the transfer price would be those incurred at the field level. If reserves are managed at the central level for the whole program, they would not also be maintained at field levels.

[a] Use the price of the most recent purchase.

[b] Drug 2 is manufactured locally. Freight and duty costs for other medicines were estimated as a percentage.

[c] All other costs and markups for reserves are allocated as a percentage of direct costs, based on the annual budget.

[d] A nonprofit organization would not have a profit markup but would have markups for building necessary reserves to cover a bad year or a disaster (such as major stock damage), assuming insurance is not available.

[e] This adjustment relates to a cross-subsidy from nonessential medicines (here drugs 2 and 4 are essential).

[f] An average of 5 percent of services are provided free over both regions. The higher level of social discounts in Region 1 is not borne only by the full payers in that region.

[g] This cross-subsidy is from the richer Region 2 to the poorer Region 1. Region 2 is assumed to have twice the volume of sales of each medicine as Region 1.

Budgeting method

In government programs, although budgets are prepared according to program needs, the amounts approved generally follow a historical basis: that is, the previous year's budget is adjusted by a percentage to reflect the expected change in overall government funding and, to some degree, shifting program priorities. Resource-allocation decisions may also be affected by political and other external forces, as discussed in Chapter 11.

The main purpose of budget preparation is to determine and obtain the level of funding needed to provide services. After the amount of funding is decided, the job of the manager is to use those funds to achieve approved program objectives in the most cost-effective way. This task is not easy when the distribution of funds among line items is inefficient and cannot be changed.

In programs that have some autonomy and that have funding from donors or from sales, the budget is prepared more as a planning tool, with a relationship among program activities, expenditures, and income. For example, in the 2005 RDF budget shown in Figure 41-1, the ability to purchase and distribute medicines valued at USD 250,000 depends on the ability to recover half the cost in sales revenue. After the budget is approved, the manager has some autonomy to reduce or increase expenditures, depending on funding levels, or to shift funds among line items to achieve maximum efficiency.

Whichever method of budgeting is used, the preparation involves identifying, quantifying, and costing the resources needed; determining the level of available funding; and adjusting expenditures to the expected level of funding.

Identify, quantify, and cost the resources needed. Each activity in the workplan must be examined, and the staff time, supplies, and equipment needed to carry it out must be quantified. For example, a CMS manager must decide how many staff are needed to properly handle and record the medicines, what types of equipment (such as forklifts or computers) are needed, what it takes to operate them, and what supplies are needed. (See the discussion of quantification of pharmaceutical needs in Chapter 20.) After each resource needed has been quantified, the cost can be estimated. If any of the resources are to be purchased long after the budget is prepared, a percentage for inflation should be added to the current price.

Determine the level of available funding. Funding may include government allocations, donor grants, and sales revenues. It is important to show each funding source separately and to show the relationship between any dedicated funding source and the expenditures to which it relates. Not all the government funding may materialize—sometimes only salaries are maintained at the budgeted level. The budget should be prepared as if the whole government allocation will be provided, but managers should anticipate that some funds may not arrive and pace spending accordingly.

In the case of revenue generated from sales, managers should be conservative when preparing estimates because of the risk that such revenues might not be forthcoming (for instance, because of collection problems). Sales revenues depend on the forecasted volume of sales for each medicine and its price. From this revenue it is necessary to deduct the sales value of medicines to be provided free (either for poor clients or for exempt services) and the value of any estimated losses—such as those due to leakage, deterioration, theft, or expiration.

Adjust expenditures to the expected level of funding. This adjustment is cyclical. Activities are originally determined in accordance with needs and with an optimistic view of funding. As the actual level of funding becomes clear, if it is less than hoped, activities are reduced or made less costly. Setting priorities among activities is useful so that it is known in advance which activities will be cut if funding is lacking.

The budget must always show the basis for each line item. For example: Fuel for transporting medicines—USD 16,000 (four vehicles at 20,000 miles per year, 10 miles per gallon, USD 2 per gallon). A budget that clearly relates financial estimates to activities is easier to justify and provides a stronger basis for obtaining the required funding. The RDF budget example in Figure 41-1 shows the number of patients to be served, which is useful to include. Types of patient (children), disease (malaria), and geographical areas to be covered could also be included.

41.7 Cash planning

Even though there may be sufficient funds in the budget, there may be times when not enough cash is available to pay the bills, especially if funding is irregular or large payments must be made (such as for a bulk purchase of pharmaceuticals). A cash flow forecast helps ensure sufficient cash to cover all anticipated financial obligations each month. An example of a cash flow forecast is given in Figure 41-5.

The cash flow forecast should be prepared from the workplan and budget. The process is simple: start with the anticipated cash balance (cash in hand and at the bank), and add receipts and deduct payments in the months when they are expected to fall. In the example shown in Figure 41-5, grants are expected to be received periodically, in January, April, July, October, and December. Sales revenue is expected to vary only slightly each month. A loan of USD 50,000 will be available in January. Capital purchases, receipts, and payments relating to accounts receivable and payable should be included in the cash flow forecast, but items that do not result in cash receipts or payments (depreciation, stock losses) can be omitted.

Figure 41-5 Cash flow forecast

CENTRAL MEDICAL STORES REVOLVING DRUG FUND
Cash Flow Forecast 2005

	Cash Budget 2005	Monthly Allocation											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RECEIPTS													
Grants	145,000	33,750			33,750			33,750			33,750		10,000
Sales revenue	125,000	10,000	10,250	10,500	10,500	10,750	11,000	10,750	10,500	10,500	10,000	10,250	10,000
Loan	50,000	50,000											
Total receipts	320,000	93,750	10,250	10,500	44,250	10,750	11,000	44,500	10,500	10,500	43,750	10,250	20,000
PAYMENTS													
Drug purchases	230,000	57,500			57,500			57,500			57,500		
Salaries	19,000	1,583	1,583	1,584	1,583	1,583	1,584	1,583	1,583	1,584	1,583	1,583	1,584
Vehicle operations	2,700	225	225	225	225	225	225	225	225	225	225	225	225
Other transport	1,600	134	133	133	134	133	133	134	133	133	134	133	133
Packaging and labeling	3,300	275	275	275	275	275	275	275	275	275	275	275	275
Utilities	2,200	183	184	183	183	184	183	183	184	183	183	184	183
Office supplies	1,200	100	100	100	100	100	100	100	100	100	100	100	100
Total payments	260,000	60,000	2,500	2,500	60,000	2,500	2,500	60,000	2,500	2,500	60,000	2,500	2,500
Receipts less payments	60,000	33,750	7,750	8,000	−15,750	8,250	8,500	−15,500	8,000	8,000	−16,250	7,750	17,500
Less capital expenditures	10,000			4,000									6,000
Net cash flow	50,000	33,750	7,750	4,000	−15,750	8,250	8,500	−15,500	8,000	8,000	−16,250	7,750	11,500
Add opening cash balance	0	0	33,750	41,500	45,500	29,750	38,000	46,500	31,000	39,000	47,000	30,750	38,500
Closing cash balance	50,000	33,750	41,500	45,500	29,750	38,000	46,500	31,000	39,000	47,000	30,750	38,500	50,000
Patient volume	500,000	40,000	41,000	42,000	42,000	43,000	44,000	43,000	42,000	42,000	40,000	41,000	40,000

If the balance at the end of any month is negative, funds will be insufficient that month. When this happens, either activities or funding schedules will have to be changed, or credit will have to be obtained. If a significant surplus exists, putting the funds into a deposit account at the bank to earn interest may be desirable, but speculative risks should not be taken to earn higher returns.

In circumstances where an additional sales markup is made on pharmaceuticals to cover replacement cost, it may be appropriate to put the additional funds generated into a separate bank account so that they will be available when the time comes to replace the pharmaceuticals. Likewise, the depreciation fund could be put into a separate bank account as a special reserve. Payments to such special-reserve accounts should be treated as cash payments in the cash flow forecast so that these funds are not perceived as being available to cover operating costs. In the month when they will be used to replace pharmaceuticals or a fixed asset, the funds should be shown as incoming revenue. Because such procedures are not considered best practice in modern financial management, however, they should be considered only by programs with limited financial management capacity.

Failure to predict cash flow accurately can result in cash shortages, which can mean problems in paying salaries (resulting in demoralization of staff), replenishing pharmaceutical stocks, keeping vehicles operational, or replacing equipment. Any one of those problems can prevent a program from achieving its objectives.

41.8 Controlling and managing resources

Good financial controls and a sound accounting system are the basis for effective financial management. Although financial managers and accountants are responsible for establishing and maintaining the control and accounting systems, the general manager must know enough about the system to supervise staff members and to detect any problems.

The first principle of cost control is that the benefit of control efforts should exceed their costs—measured in money, time, or effort. Some government-based controls are so cumbersome and bureaucratic that they prevent the organization from meeting its objectives. For example, the use of multistage, paper-based procedures for controlling goods received has resulted in delays of weeks and months in processing supplies following delivery, preventing customers from being supplied, even though supplies were physically available. Process flows should be analyzed and modified to avoid such a scenario.

Standardized financial controls and accounting procedures help ensure that resources are generated and used properly and that a complete and accurate financial picture of operations, assets, and liabilities can be obtained. See Box 41-2 for a financial control checklist.

The three main principles of an effective financial control system are to—

1. Divide duties among individuals so that no one person can control all phases of a transaction. For example—
   - Tasks of requesting payment, authorizing payment, and issuing checks should each be carried out by a different person.
   - The person who prepares a bank reconciliation should not handle or record receipts or payments.
   - The person making purchases and the person paying for them should be different, and they should report to different supervisors.

2. Use financial control procedures to regulate transactions. For example—
   - Issue preprinted, serially numbered receipts for all inflows of cash.
   - Deposit all cash receipts in the bank and make deposits promptly.
   - Minimize the use of cash and require detailed expense reports with receipts for such transactions.

3. Use the accounting system to record and monitor all transactions and assets. For example—
   - Record all issues of medicines in the accounting records and include the value of stocks in the accounting system.
   - Produce monthly income and expenditure statements from the accounting system and review the figures for stocks, sales, and waivers.

Usually, government systems require extensive approval procedures before funds can be spent. Managers still must ensure, however, that the funds have been spent wisely and well. The first step is to have a strict approval process for expenditures. This process includes keeping good records of uncommitted fund balances for each line item (with separate amounts for each donor, if necessary) and approving expenditures only after ensuring that they are within the budget and that adequate cash is currently on hand. If the spending follows the current budget and the budget has been regularly reviewed so that it is in line with program needs, the use of the funds can be approved.

Reviewing prices paid for services or products is important to ensure that the best price and quality were obtained, and to check that the services or products were actually received. For example, before paying a bill for painting a storeroom, the manager should visit the storeroom to see whether the job was done well. Before paying for a batch of medicines, the manager should go to the store and see whether they are on the shelves and shown in the stock

Box 41-2
Manager's checklist for good financial control

Controlling receipts

- Issue prenumbered receipts for all cash received.
- Keep all original receipts and copies of canceled checks.
- Control all receipt books in use and in stock, and lock up all unused receipt books.
- Keep all cash and checks received separate from other funds. Do not use them as a source for payments, and bank them promptly.
- Reconcile the bank balance every month.
- Use a register to record all checks received.
- Do not cash personal checks from petty cash.
- Use a register to record all donations of supplies or fixed assets, showing the value.

Controlling assets

- Maintain up-to-date inventory records and reconcile balances each month with the accounting records.
- Physically check a sample of inventory balances each month.
- Maintain a fixed assets register.
- Keep up-to-date maintenance and inspection records.
- Put permanent identification tags, numbered sequentially and recorded in the asset record, on all equipment.
- Make a photographic or video record of all equipment and assets.
- Protect against loss or theft of assets with appropriate security and insurance.
- Keep usage records for equipment and vehicles (for example, log books).
- Monitor advances and accounts receivable and make sure that they are cleared within a prescribed period.
- Make arrangements for recovering overdue staff advances from salaries.
- Place cash reserves in low-risk, interest-earning investments (such as bank savings accounts).

Controlling expenditures

- Establish detailed procurement procedures.
- Obtain written bids or quotes for all purchases above a specified limit and file them with the purchase order.
- Use a local purchase order for all local purchases.
- Check that goods and services purchased are received and recorded (pharmaceuticals must be entered in inventory records).
- Check that the quality, quantity, and price of goods or services received correspond to purchase specifications.
- Make all payments for goods or services by check.
- Require supporting documentation for all purchases.
- Make sure that all expenditures are genuine, reasonable, and in line with program plans and budgets.
- Check the proposed expenditure against the budget and ensure that the budget is up-to-date regarding donor contributions and sales revenue.
- Check that funds are available.
- Check that the petty cash balance is maintained at the agreed level of imprest.
- Control liabilities
- Manage supplier accounts so that balances are paid promptly when they are due for payment.
- Maintain control over suppliers' invoices, know what supplies have been paid for and when they will be delivered, and monitor date of receipt.

Many programs use computerized management information systems that carry out or support these controls. Such computerized systems can greatly improve the level of financial control by providing regular, up-to-date information, data analysis, and report generation with levels of detail that are not possible using manual systems. These systems, however, bring their own control challenges, which are best addressed before and during the implementation phase. They include—

- Conducting a thorough review when planning a computerized system. The system should be designed to make the most of the computer's functionality and should not just mimic the previous manual system.
- Completing a review of system rights and privileges and incorporating those attributes as well as any changes in the new system. System rights and privileges specify who can change the system, change data, edit master files, enter and confirm different transactions, and has read-only access. The review team needs to include senior management and the internal auditor (if there is one); the review should not be left solely to information technology staff.
- Reviewing software license agreements to ensure all aspects of the program are included and sufficient flexibility exists to support potential evolution of the program.
- Establishing a system security policy.
- Establishing a data backup policy.
- Ensuring that internal and external audit staff members are qualified to audit computerized systems.

Figure 41-6 Budget report

CENTRAL MEDICAL STORES REVOLVING DRUG FUND
Operating Budget Report March 2005

	Budget 2005	*Budget Year-to-Date*	*Budget Month*	Actual Year-to-Date	Actual Month	Variance Year-to-Date
INCOME FROM GRANTS						
Grants	*135,000*	*33,750*	*0*	33,000	0	(750)
Donated medicines	*50,000*	*12,500*	*4,167*	15,000	5,000	2,500
Total grants	*185,000*	*46,250*	*4,167*	48,000	5,000	1,750
MEDICINES ACCOUNT						
Sales revenue	*125,000*	*31,250*	*10,417*	30,000	9,000	(1,250)
Less cost of medicines dispensed	*250,000*	*62,500*	*20,833*	64,000	21,000	(1,500)
	(125,000)	*(31,250)*	*(10,416)*	(34,000)	(12,000)	(2,750)
Less cost of expired medicines, etc.	*12,500*	*3,125*	*1,042*	3,500	1,500	(375)
Surplus/deficit on medicines account	*(137,500)*	*(34,375)*	*(11,458)*	(37,500)	(13,500)	(3,125)
EXPENSES						
Salaries	*19,000*	*4,750*	*1,583*	4,800	1,600	(50)
Vehicle operations	*2,700*	*675*	*225*	700	240	(25)
Other transport	*1,600*	*400*	*133*	390	120	10
Packaging and labeling	*3,300*	*825*	*275*	800	300	25
Utilities	*2,200*	*550*	*183*	600	150	(50)
Office supplies	*1,200*	*300*	*100*	296	110	4
Total operating expenditures	*30,000*	*7,500*	*2,499*	7,586	2,520	(86)
Depreciation	*10,000*	*2,500*	*833*	2,500	833	0
Total expenses	*40,000*	*10,000*	*3,332*	10,086	3,353	(86)
Income less expenses	*7,500*	*1,875*	*(10,623)*	414	(11,853)	(1,461)
Patient volume	*500,000*	*41,667*	*125,000*	40,997	123,489	(1,511)

records. Checking a few of the items purchased should be sufficient.

To avoid spending the entire available budget during the first few months, program managers may establish a monthly spending limit, requiring special approval of any expenditure in excess of that limit. However, to avoid lengthy approval delays, financial managers may want to establish special procedures to accommodate known fluctuations caused by planned outlays for annual rents or capital improvements. Because the expenditure budget is based on a particular level of funding, updating the budget is vital if any significant variation in funding is expected (anything over 5 percent would be significant). For example, if a donor that was going to provide 10 percent of the pharmaceutical supply can now provide only 5 percent, the budget must be revised. If additional funding is generated, the expenditure budget can be increased accordingly or the surplus reserved for unidentified future requirements.

The accounting and reporting system must provide fast, accurate information in terms of funds received and expenditures made so that budget adjustments can be made promptly. With increased use of computers in program management, budgeting tasks can be handled more quickly and more accurately, but manual record keeping is still the norm in many places. If computer-based systems are used, making regular backup files or printing hard-copy reports periodically is a good practice. In either case, a budget report must be produced every month. This report shows the budgeted and actual figures for each revenue and expense category for the month and for the year to date and also shows the variance between the year-to-date budget and the year-to-date actual figures. All significant variances must be investigated and appropriate action taken. A sample budget report is shown in Figure 41-6.

Cash and bank movements and balances should be reviewed daily to make sure that receipts and payments are as expected and that funds are sufficient to meet obli-

gations. A statement should be obtained from the cashier each morning showing the opening balance, cash received by source, payments made, closing balance for the previous day, and payments due that day.

Usually, imported supplies will be paid for in foreign currency (often U.S. dollars). To protect against currency fluctuations, maintaining a U.S.-dollar bank account to hold funds for future procurement is sensible, when this is possible. The U.S. dollar is also the currency frequently used for donated funds. When such funds are provided for procurement purposes, donors should be persuaded to pay in U.S. dollars deposited to the CMS dollar account. This procedure not only preserves procurement capacity of the funds against exchange-rate movements, but also avoids commissions charged by banks to exchange dollars into local currency and then back into U.S. dollars.

It is also important to have an annual external audit, which helps ensure that controls are operating properly and that transactions are being properly recorded. This institutional audit should cover both donor funds and the organization's own funds. Separate audits of individual donor funding should be discouraged because they do not provide a complete picture and consume excessive amounts of management time. Instead, managers should attempt to persuade donors to share in the cost of the institutional audit.

41.9 Accounting and reporting

An autonomous pharmaceutical program can normally establish its own accounting and reporting procedures, provided they are in accordance with generally accepted accounting principles. However, a government program usually must follow uniform accounting procedures. As described in Section 41.2, standard government accounting systems may not provide adequate information on transactions or assets and may not allow performance to be measured accurately. In order to satisfy management needs, supplementary records must be kept and additional reports produced. The following books, or subsidiary ledgers, are usually required for a complete accounting and reporting system—

- Cash-received book showing the date and source of receipts (such as donor, government, or sales point) and when and where the cash was deposited
- Cash-paid book showing payee, purpose, funding source, and bank account
- Petty cash book for small cash payments
- Accounts receivable ledger with accounts for people who owe money to the organization
- Accounts payable ledger with accounts for people who are owed money by the organization
- Journals showing purchases and sales made on credit, transfers between accounts, and donations in kind
- General ledger with income, expense, asset, and liability accounts
- Salary book showing details of staff salaries and allowances
- Inventory records showing the quantity and cost of all medicines received, issued, and on hand by type of medicine
- Fixed assets register showing the quantity and cost of all fixed assets bought, sold, and on hand

Some of these ledgers may be consolidated in an integrated, computerized accounting package.

The chart of accounts, which sets out the accounts structure, lists all accounts—with a unique code for each. The code is used primarily to identify the type of asset, liability, revenue, or expense (for example, bank account, medicine sales, or salaries), but it can also be used to identify a responsibility center (such as a regional distribution center) or donor fund (such as a tuberculosis program). For the accounting system to provide the control and information required, the accounts must be structured appropriately. For example, in order to readily produce a report showing expenses for each regional center, each expense item must be coded by regional center and posted to a separate account. The coding structure should be detailed enough to provide needed managerial information but not so complex that excessive effort or skill is required to code and process transactions accurately.

Transactions must be recorded and processed promptly and accurately. For example, if all pharmaceutical issue records are not up-to-date in the accounting books, it will be impossible to reconcile the inventory balances in the accounting department with those shown on the warehouse stock cards.

The accounting system should produce a number of basic reports that provide all the information needed to review financial progress and status. In particular, the reports should indicate clearly if the program is—

- Meeting its financial objectives—for example, covering costs or generating a surplus
- Operating efficiently and effectively
- Looking after its assets
- Generating and using resources properly
- Meeting donor requirements

Reports should be produced both monthly and annually. The most common standard reports are as follows—

Budget performance report: This monthly report compares budgeted and actual revenue/expenses (see Figure 41-6).

Income and expense report: This report, produced monthly and annually, shows all income and expenses to date

and the cumulative surplus or deficit (Figure 41-7). For comparative purposes, actual figures for the previous year and budget figures for the current year are shown. A key figure is the deficit or surplus in medicines funding as a percentage of the cost of medicines issued or the cost of sales. This figure shows the extent to which medicine costs are being recovered. For the 2005 figures shown in Figure 41-7, the deficit of USD 138,000 represents 57 percent of the cost of medicines issued (USD 242,000). This deficit means that 43 percent of the cost of medicines is being recovered, taking into account stock losses. In Figure 41-2, the projected surplus (contribution line) of USD 170,300 for 2007 represents 14 percent of the USD 1,211,800 cost for medicines sold. These percentages are a measure of effective pricing, revenue collection efficiency, and control over stock losses.

Balance sheet: This report, produced monthly and annually, shows the soundness of the program at one point in time. It shows the balances at the end of the period for all assets, liabilities, reserves, and fund balances (Figure 41-8). Certain key ratios help managers to evaluate the program's financial health. The ability of the program to meet its current liabilities in the short term is measured by comparing the cash balance with the accounts payable (in 2003, this would be USD 4,520 compared with USD 4,230). The same measure in the medium term compares the total current assets with the total current liabilities (USD 62,650 compared with USD 7,246 in the same example). When assessing the ability of a program to meet its liabilities, it is vital to be sure that the amounts for pharmaceutical stock and accounts receivable are realistic—that is, that they will result in cash income that can be used to meet those liabilities. Note that a strong balance sheet can be a misleading indicator of an organization's financial health. For example, abundant long-term assets cannot satisfy immediate short-term liabilities. Provisions should be made to account for obsolete and slow-moving medicine stocks and for old accounts receivable in the balance sheet.

Pharmaceutical stock account: It is important to prepare a summary of the pharmaceutical stock account as an attachment to the income and expense report (see Figure 41-7). This summary shows the total figures for pharmaceuticals received and issued, as well as opening and closing balances, and it provides a picture of the movements in that account. If a computerized accounting program is used, the program should be able to produce a similar report for each pharmaceutical, a feature that is useful for measuring sales frequency and months of stock on hand. Chapter 40 discusses a number of analyses that can help managers understand and control inventory costs.

Accounts payable and receivable: These additional reports support the figures shown in the balance sheet and show the balance for each debtor and creditor, with a breakdown of the balance by month of origin. The older a receivable item is, the less likely the funds are to be collected; a procedure should be in place to account for uncollectible debts. In addition, old accounts payable may be an indication of poor management or cash flow issues.

Figure 41-7 Income and expense report

CENTRAL MEDICAL STORES
REVOLVING DRUG FUND
Income and Expense Statement 2005

	Actual 2004	*Budget 2005*	Actual 2005
INCOME FROM GRANTS			
Grants	*188,000*	*135,000*	130,000
Donated medicines	*98,000*	*50,000*	50,000
Total grants	*286,000*	*185,000*	180,000
MEDICINE ACCOUNT			
Sales revenue	*0*	*125,000*	120,000
Less cost of medicines issued[a]	*240,000*	*250,000*	242,000
	(240,000)	*(125,000)*	(122,000)
Less cost of expired medicines, etc.	*15,000*	*12,500*	16,000
Surplus/deficit on medicines	*(255,000)*	*(137,500)*	(138,000)
EXPENSES			
Salaries	*18,000*	*19,000*	20,000
Vehicle operations	*2,500*	*2,700*	2,876
Other transport	*1,500*	*1,600*	1,745
Packaging and labeling	*3,000*	*3,300*	2,908
Utilities	*2,000*	*2,200*	2,190
Office supplies	*1,000*	*1,200*	1,186
Total operating expenditures	*28,000*	*30,000*	30,905
Depreciation	*0*	*10,000*	10,000
Total expenses	*28,000*	*40,000*	40,905
Total income less expenses	*3,000*	*7,500*	1,095
Patient volume	*520,000*	*500,000*	490,346

[a]PHARMACEUTICAL STOCK ACCOUNT

	Actual 2004	Actual 2005
Opening stock	*85,000*	88,000
Purchases	*160,000*	230,000
Donations received	*98,000*	50,000
	343,000	368,000
Less cost of medicines dispensed	*240,000*	242,000
	103,000	126,000
Less cost of medicines expired, etc.	*15,000*	16,000
Closing stock	*88,000*	110,000

Certain reports, such as the income and expense report, can be prepared for different responsibility centers, such as regional distribution centers. If different funding agencies

Figure 41-8 Balance sheet

CENTRAL MEDICAL STORES
REVOLVING DRUG FUND
Balance Sheet as of December 31, 2003

	31 Dec 02	31 Dec 03
ASSETS		
Fixed assets		
Cost	40,000	53,000
Depreciation	17,000	21,000
Net fixed assets	23,000	32,000
Current assets		
Cash and bank	2,356	4,520
Accounts receivable	7,560	8,330
Pharmaceutical stocks	43,780	49,800
Total current assets	53,696	62,650
LIABILITIES AND CAPITAL		
Current liabilities		
Accounts payable	3,456	4,230
Advance payments	2,540	2,760
Accruals and provisions	245	256
Total current liabilities	6,241	7,246
Working capital	47,455	55,404
Total net assets	70,455	87,404
FINANCED BY		
Loans		
Long-term loan	8,900	8,100
Equity		
Capital	500	500
Capital fund	24,560	29,800
Revenue reserves	12,310	13,200
New working capital	3,000	3,000
Donor grants	21,185	32,804
Total equity	61,555	79,304
Total long-term loans and equity	70,455	87,404

require separate reports, the reports can be prepared by funding source, provided that this capability is built into the account structure. Producing reports by responsibility center or funding source is easy if the accounting system is computerized. However, with a manual accounting system, the accounts can be set up in only one way—by responsibility center or by funding source. The decision should be based on the relative importance of each kind of analysis and the ease of extracting information from the accounting system. For example, if regional sales are of interest, these data can be extracted from the monthly regional reports.

Where a pharmaceutical sales program is in place, it is important to record and report revenue lost because of free distribution of medicines. Waivers for sales to the poor and exemptions applicable to special age groups or other categories should be recorded using special receipts. Such transactions should be authorized by the manager. They should be put into the books as sales and debited to a special account for free issues. They will then appear as an expense in the income and expense report.

In order to measure a program's output in terms of pharmaceuticals issued or the surplus or deficit from pharmaceutical sales, it is necessary to record the cost of pharmaceuticals issued. This process is an accounting transfer from the pharmaceutical stock account to a cost-of-issues account. The pharmaceuticals issued are valued at the cost of purchase—that is, at the same value at which they entered into the pharmaceutical stock account.

When quantities of a pharmaceutical in stock have been bought at different prices, there are different ways to value the quantity issued and, at the same time, the value of stock on hand. See Box 41-3 for a comparison of the three common methods. It is important to remember that the accounting method used determines how much surplus or deficit is shown in the income and expense report and how much stock value is shown in the balance sheet. Consistency is most important—the same method should be used each year. If a change is made in the methodology used, it must be disclosed in the organization's financial statements.

The average method is recommended because it is the easiest to understand. Calculating the average cost is simple: the financial balance in the stock account is simply divided by the number of units on hand. The average cost is updated every time a new purchase is made. Issues are then charged out at the average cost of the items in stock.

In the case of high inflation or large exchange fluctuations, where a computerized accounting program is used, keeping stock records in a stable foreign currency may be useful. Local currency records must still be kept, however.

In an autonomous RDF, generating sufficient revenue to replace stocks is extremely important. This is best done by creating a reserve for the purchase of replacement stocks. For example, if the replacement cost is expected to be 20 percent above the current cost, an extra 20 percent markup should be added to pharmaceutical sales prices, and an amount equivalent to that 20 percent for all sales for the month should be added to the reserve set aside to replace the stocks (see Section 41.5 and Chapter 13). ■

References and further readings

★ = Key readings.

★ Creese, A., and D. Parker, eds. 1994. *Cost Analysis in Primary Health Care. A Training Manual for Programme Managers.* Geneva: World Health Organization. <http://whqlibdoc.who.int/publications/9241544708.pdf>

Box 41-3
Three methods of accounting for medicines issued

FIFO (first in/first out). Issues are charged out at the purchase cost of the earliest batch in stock. This method charges less to cost of sales and values stock higher.

LIFO (last in/first out). Issues are charged out at the purchase price of the latest batch in stock. This method charges more to cost of sales and values stock lower.

AVG (average). Issues are charged at the average price of the items in stock; the average is updated every time a new purchase is made. This puts the same value on issues and stocks.

LIFO is the most conservative method because it puts the lowest value on stocks and the highest value on issues. The average method is somewhat conservative, and the FIFO method is the least conservative. With both FIFO and LIFO, record keeping is more complicated, because it is necessary to keep track of how much balance remains from each purchase, and issues may have to be charged out at two or more prices.

Example of the effect of the three methods of accounting for medicines issued

	# Units	Unit price (USD)	FIFO (USD)	LIFO (USD)	AVG (USD)	Avg. unit cost (USD)[a]
Bought January 1	100	1	100	100	100	
Bought February 1	100	2	200	200	200	
Balance February 1	200		300	300	300	1.50
Issued February 22[b]	120		140	220	180	
Balance February 28	80		160	80	120	
Bought March 1	100	3	300	300	300	
Balance March 1	180		460	380	420	2.33
Issued March 26	80		160	240	186	
Balance March 31	100		300	140	234	

[a] Average unit cost changes with new purchase.
[b] The figures for the February 22 issues are calculated as follows:
‰ FIFO—100 units at 1 USD and 20 units at USD 2;
‰ LIFO—100 units at 2 USD and 20 units at USD 1;
‰ AVG—120 units at the average unit cost of USD 1.50 (total cost of USD 300 divided by total quantity purchased of 200).

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★ ————. 1991. "Managing Your Finances." In *The Family Planning Manager's Handbook: Basic Skills for Managing Family Planning Programs*. Boston: MSH. <http://erc.msh.org/mainpage.cfm?file=handbook2.htm&module=enhancement%20other&language=English>

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ASSESSMENT GUIDE

Current pharmaceutical budget and expenditures

- What is the ministry of health's (MOH) per capita budget or total expenditure on pharmaceuticals, in U.S. dollars?
- What was the value of the public pharmaceutical budget spent per capita in the last year, out of the average value of the same budget during the past three years?
- How much of the public pharmaceutical budget was spent, of the public pharmaceutical budget allocated?
- During the last fiscal year, how much did the central medical store spend on fuel for transport, maintenance, administration, hired labor, warehouse space (rent, telephone, utilities), or other costs (describe)?

Accounting system

- Is the pharmaceutical program's accounting system on a cash basis or an accrual basis?
- Do accounts exist for stock? What accounting method is used to value pharmaceutical stocks and issues—first in/first out (FIFO), last in/first out (LIFO), or average costing?
- Are records kept on the value of donated medicines? The cost of expired or lost medicines? Depreciation of fixed assets?
- Are records maintained for accounts payable? Accounts receivable?
- Does a chart of accounts exist? Is it structured to provide necessary management information?

Financial planning, budgeting, and cash planning

- Is there a long-range financial plan projecting both funding and expenditures for the next five years, and maintained on a rolling basis? Is a factor for inflation built into the plan?
- If pharmaceutical sales are anticipated, have pricing strategies been determined? Does the plan project the point at which revenues will cover expenses?
- Which offices are responsible for developing and approving budgets? (List steps and persons or offices responsible.) What information is used in developing budget requests?
- What information and supporting documents are submitted with budget requests?
- How does the MOH access budgeted funds for routine procurement—by scheduled allocation or access whenever needed?
- What approvals are required for expenditures?
- How does the MOH access funds for emergency procurement?
- What is the average lead time for MOH approval of procurement allocation (for both routine and emergency procurements) and for approval of foreign exchange allocation?
- How does the MOH access foreign exchange for procurement?
- Is the annual budget based on the first-year figures from the long-range financial plan? Are there separate operating and capital budgets?
- Does the budget relate financial estimates to activities in terms of the number of patients to be served, types of patients, diseases, and/or geographical areas to be covered?
- Has a cash flow forecast been developed to support the budget?

Costing

- Are the costs of in-country transportation, repackaging, medicine losses, and other operating expenses included in total pharmaceutical costs?
- Are analyses performed with regard to the cost of serving different patient volumes, different patient types, or different disease types?
- For an RDF, has a break-even point been projected?
- What method is used to value inventory?

Financial control and reporting

- Are duties divided among individuals so that no one person can control all phases of a transaction?
- Are preprinted, serially numbered receipts issued for all inflows of cash? Are cash receipts deposited promptly?
- Is there a budget approval process by which expenditures are approved only after ensuring that funds are available?
- Is the budget revised when funding is greater or less than anticipated?
- Is a budget report produced every month, showing budgeted and actual figures and variances for each revenue and expense category? Are causes of variances analyzed and addressed?
- Are income and expense reports, balance sheets, summaries of the pharmaceutical stock account, and reports on accounts payable and receivable prepared monthly and annually?
- Is an annual institutional audit performed by external auditors?