



Analyzing the costs to deliver medication therapy management services

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Abstract

Objectives: To provide pharmacy managers and consultant pharmacists with a step-by-step approach for analyzing the costs of delivering medication therapy management (MTM) services and to describe use of a free online software application for determining costs of delivering MTM.

Practice description: The process described is applicable to community pharmacies and consultant pharmacists who provide MTM services from nonpharmacy settings.

Practice innovation: The PharmAccount Service Cost Calculator is an Internet-based software application that uses a guided online interview to collect information needed to conduct a comprehensive cost analysis of any specialized pharmacy service. In addition to direct variable and fixed costs, the software automatically allocates indirect and overhead costs to the service and generates an itemized report that details the components of service delivery costs.

Results: The service cost calculator is sufficiently flexible to support the analysis of virtually any specialized pharmacy service, irrespective of whether the service is being delivered from a physical pharmacy. The software application allows users to perform sensitivity analysis to quickly determine the potential impact that alternate scenarios would have on service delivery cost. It is therefore particularly well suited to assist in the design and planning of a new pharmacy service.

Conclusion: Good management requires that the cost implications of service delivery decisions are known and considered. Analyzing the cost of an MTM service is an important step in developing a sustainable business model.

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Learning objectives

At the conclusion of this activity, the pharmacist will be able to:

- Describe the major operating costs that are incurred to deliver medication therapy management (MTM) services to patients.
- Classify operating costs as fixed or variable and explain the importance of this distinction for making sound management decisions.
- Explain the importance of service volume on the per-encounter fixed costs of delivering an MTM service
- Calculate with accuracy the cost of delivering an MTM service to a patient.

While channel surfing recently, I happened upon a broadcast of the great Cecil B. DeMille epic, *The Ten Commandments*. I caught it near the end when Moses comes down from Mount Sinai with 10 laws to guide his people out of the wilderness and into the Promised Land. As I admired how well this classic film has held up since it was released in 1956, it occurred to me that pharmacy's journey from suppliers of products to providers of clinical services is not unlike the long, meandering journey of the children of Israel.

At the risk of torturing my metaphor completely to death, if pharmacy were to send its own Moses to the mountain for guidance, I think the first commandment written on the tablet (or iPad) he came down with would be this: Thou shall have a sustainable business model to support thy practice model!

Furthermore, I believe this commandment should be carved in stone above the front door of every school of pharmacy so that faculty are reminded of it every day.

A recent article in *JAPhA* stressed the importance of developing a business model for medication therapy management (MTM) services.¹ Clearly, developing the service's objectives, policies and procedures, marketing, promotion, billing, and payment strategies are essential components of a successful MTM business model. However, if the provider does not know the full cost of the service they are providing to patients, then they have already violated the first commandment.

Whether you are a price maker trying to decide what price to set for your service or a price taker trying to decide whether to accept a price that has been set by a payer, you need to know your costs to make an informed decision.

McDonough et al.² reported the results of a retrospective financial analysis of an MTM service in one independent community pharmacy. In addition to the direct fixed and variable costs of the service, the authors appropriately included indirect and overhead costs and used defensible rules to allocate them to the service, thereby satisfying the criteria for full-cost accounting. Also notable is their use of sensitivity analysis to estimate the effect that altering selected aspects of service delivery might have had on costs and profitability.

Essentially, sensitivity analysis amounts to asking a series of "what if" questions. For example, what if a student pharmacist or resident had performed selected aspects of the MTM service instead of a staff pharmacist? What if the service had required the pharmacist to complete additional training or certification? What if the service had required the pharmacy to purchase new equipment, computer software, or drug information resources? How would the service delivery cost and resulting profitability have been affected under these alternative scenarios?

The results of their analysis demonstrated that a modest profit was generated from the pharmacy's 16-month experience with MTM service delivery. However, sensitivity analysis also revealed that relatively minor alterations in the service would have resulted in substantially different outcomes, including crossing the fine line that separates a financially sustainable service offering from one that is unsustainable without subsidy from other parts of the business.

This article describes a step-by-step guide to analyzing

the cost of delivering a professional pharmacy service, such as MTM, using an online service cost calculator. This software application is sufficiently flexible to allow an analysis to be conducted on virtually any specialized pharmacy service, regardless of whether that service is being delivered from a pharmacy. In addition to direct variable and fixed costs, the software automatically allocates indirect and overhead costs to the service using defensible criteria and allows the user to perform sensitivity analysis to quickly determine the potential impact that alternate scenarios would have on service delivery cost. As a result, the application is particularly well suited to assist in the design and development of a new specialized service.

For those who are still in the planning or preplanning stage of MTM service development, a host of helpful resources may be found on the American Pharmacist Association (APhA) website (www.pharmacist.com) by clicking on the MTM Central tab at the top of the homepage. Among the useful resources that are listed in the Featured Items sidebar are a searchable online resource library, an MTM Core Elements Toolkit, an annually updated MTM Digest, a guide to MTM documentation and billing, and MTM training and certification programs that are available through APhA.

Additional guidance on planning and implementing new MTM services can be found in a number of excellent articles and book chapters on the topic in the professional literature.^{1,3-7}

Principles of service cost analysis

Before discussing the service cost calculator, reviewing the basic principles of service cost analysis is helpful. For the purpose of this discussion, the cost of MTM service delivery is defined as the operating costs incurred by the practice to deliver one unit of the service to a patient. Although each service is different, for most MTM services, a unit of care corresponds to a single patient encounter or similarly discrete episode of care.

The costs required for a full-cost accounting of an MTM service include the following:

- Salary, wages, and benefits of all personnel involved in delivering the service
- Nonsalary direct costs such as special education or training, information resources, and marketing/promotion activities
- All materials and supplies routinely consumed during delivery of the service
- The cost of equipment used primarily or exclusively to support the service
- A fair share of overhead costs

Nature of costs

Operating costs of an MTM service may be broadly divided into two types: direct and indirect.

Direct costs

Direct costs are those that are directly caused by and traceable to the service in question. As such, direct service costs would not be incurred if the service were not being performed.

These direct service costs may be further distinguished

as either variable or fixed. Importantly, this distinction is not based on whether the cost varies per se, as all costs in a pharmacy will vary over time. Instead, what makes a cost variable in the accounting sense is that it varies in direct proportion to the volume of service being delivered, usually as a result of a direct cause-and-effect relationship.

For example, a familiar direct variable cost of dispensing a prescription in community pharmacy is the cost of the prescription vial. The cost of this supply represents a direct variable cost of each dispensed prescription because one vial is typically consumed each time a prescription is dispensed. Similarly, any material or supply that is routinely consumed during the delivery of a service would be considered a direct variable cost of service delivery. For example, one test cassette is consumed with the delivery of each unit of a lipids testing service.

In contrast to variable costs, direct fixed costs result from any resource in the practice that is specifically involved in the delivery of the service but the cost of which does not vary in proportion to the volume of service delivered. Referring once again to our prescription dispensing example, the most substantial direct fixed cost of dispensing a prescription is personnel cost, especially the cost of the pharmacist, which typically represents about 50% of the cost of dispensing a prescription. Because the pharmacy staff that is scheduled to work on a particular day will cost the practice the same regardless of whether an additional prescription is dispensed that day, their wages and benefits are considered fixed costs of dispensing.

In service delivery, the cost of capital equipment used to deliver the service would be an example of a direct fixed cost. Returning to our example of a lipids testing program, the Cholestech LDX device that is used to read the test cassette would be a direct fixed cost of the service.

Indirect costs

Indirect costs are those that would be incurred in the practice even if the service was not performed. In cost accounting, a fair share of these “overhead” costs must be absorbed by each revenue-producing activity in the business. This is accomplished by allocating a portion of all indirect costs in the practice to each activity using some reasonable criteria. In most cases, the criterion used to allocate indirect costs to a service is based on one of two rules: (1) the amount of space the service occupies during operating hours, or (2) the proportion of total sales the service accounts for in the business. The most important thing is that a defensible rule is consistently used in allocating the particular indirect cost to the service in question.

The distinction between variable and fixed costs is more than just accounting semantics. Understanding this difference is essential to appreciate the full implications of any price-setting or -taking decision that the manager makes because it is linked to two important concepts: breakeven and contribution margin.

As we have already discussed, the full cost of delivering a service is equal to the sum of all variable and fixed costs (i.e., total cost = variable costs + fixed costs). Naturally, just as in dispensing prescriptions, if revenues do not exceed total cost, then the pharmacy does not make a profit.

Breakeven analysis. One way to evaluate the economic implications of setting or accepting a particular price for a service is to perform a breakeven analysis to determine the volume at which total sales revenues for the service equal total costs at any given price. A breakeven analysis provides the manager with a sales volume goal that the practice must meet at a given price during a given time period in order to turn a profit. This, in turn, provides insight into whether the proposed price for the service is reasonable given its cost of production and the likely demand by patients and/or payers.

But just as in the prescription dispensing business, this simple calculation does not tell the whole story. Why? Because in the algebra of pricing decisions, all costs are not created equal. Variable costs carry more weight because of a concept called contribution margin.

Contribution margin. The contribution margin for a service is calculated by deducting the variable costs of delivering the service from sales revenue. If the resulting value is negative, it tells the manager that the proposed price for the service does not even cover the cost of resources that are actually consumed in delivering it, much less the fixed costs and overhead. Setting or accepting a price for a service that does not cover the direct variable costs of delivering the service would be considered financially irrational unless the objective of the service were strictly promotional or altruistic.

If the difference between sales and variable costs is positive, it indicates that the amount of revenue that can “contribute” to meeting the remaining fixed costs of maintaining the practice and, hopefully, produce a profit (i.e., sales – variable costs = contribution margin; contribution margin – fixed costs = net income).

Example cost calculation

An example using an online service cost calculator will help to illustrate these important concepts. PharmAccount (www.pharmaccount.com) is an Internet-based suite of software applications designed to assist pharmacy owners and managers to make better financial decisions. Currently supported applications include a cost of dispensing calculator, a financial ratio calculator, and a service cost calculator. All three applications use a similar step-by-step online-guided interview to collect the information needed to perform the particular analysis.

ABC Pharmacy is an independent community pharmacy that has developed a (hypothetical) MTM service called Medi-Max. The service targets patients who are having difficulty adhering to their medication therapy and focuses on creating individualized solutions to optimize adherence and persistence. Patients are referred to the service by their physician, and the service is typically delivered during a series of face-to-face encounters between the pharmacist and the patient during which the cause(s) of the nonadherence is determined and a corrective plan of action is developed and implemented.

The management of ABC Pharmacy wishes to know what price the pharmacy should set and/or accept for the Medi-Max service. Naturally, establishing a pricing strategy involves more than just knowing costs. However, establishing a rational pricing strategy is not possible if you do not know how much your

service costs to produce; therefore, performing a cost analysis represents an important first step in MTM pricing or contracting.

To begin our analysis, the PharmAccount Cost of Service Calculator requires some descriptive information about the practice from which the service will be delivered. Figure 1 illustrates the type of information required in step 1 of the process.

So, what do we need to know about the Medi-Max service to perform an accurate cost analysis?

Personnel. Personnel time is typically the single greatest contributor to the cost of delivering an MTM service. It is also the cost that is easiest to misjudge and is often the most difficult one to control. As a result, the importance of measuring it accurately and managing it efficiently cannot be overstated.

An accurate cost analysis requires that personnel expense includes all staff time that is routinely required to deliver the service. Importantly, this includes more than just face-to-face time with the patient during the service encounter. It also includes any preservice time the pharmacist spends preparing for the encounter and any postservice time that is spent documenting or following up with the patient or the patient's physician or caregiver. Clearly, time spent preparing for and/or following up a service encounter is more flexible than face-to-face time with the patient and therefore may be performed when the pharmacist is not otherwise occupied. However, a full-cost accounting approach requires that this time be included in the analysis just as it is in the calculation of physician time in the resource-based relative value scale approach that is used to value physicians' services in Current Procedural Terminology coding. Still, recognizing the legitimate practical distinction between intra- and extraencounter personnel costs in settings where the pharmacist has a certain amount of "idle" time during which to perform these periencounter activities is not inappropriate.

Also important is noting that the personnel costs of delivering a service will often decrease over time as staff become more proficient and workflow adjusts to more efficiently accommodate the service. These "learning curve" effects can significantly reduce overall service delivery costs. It is therefore worthwhile to periodically reassess the amount of personnel time required to deliver the service while continuing to seek ways to streamline service delivery.

In our example, a typical Medi-Max patient encounter requires an average of approximately 30 minutes of staff time. Recognizing the importance of deploying ABC Pharmacy's human resources efficiently, the manager has assigned staff to optimize workflow and minimize costs. Typically, the patient is

greeted by a clerk who escorts the patient to the consultation area (5 minutes). Collection of patient intake information and review of the patient's current medication list is then conducted by a technician (10 minutes), after which the pharmacist reviews the information in consultation with the patient, makes her assessment, and formulates an action plan (15 minutes). The respective time required of each staff member is entered in step 2 of the service cost calculator, as is the cost of each person involved, inclusive of all salary/wages and benefits (Table 1).

An important difference between the cost of dispensing prescriptions and the cost of delivering a service is that personnel are considered a fixed cost in the former but are more appropriately considered a variable cost in the latter unless the practice is devoted primarily to nondispensing services. As we will see, this distinction can dramatically alter a manager's pricing and contracting decisions for the service.

Materials and supplies. Materials and supplies are resources that are physically consumed during the delivery of the service. In the Medi-Max program, these include a medication scheduler that is provided to each patient. The scheduler is



Figure 1. PharmAccount Cost of Service Calculator: Step 1: Operations data

Table 1. Example PharmAccount cost of MTM service calculation: Personnel expenses

Time (minutes)	Position	Service responsibility	Cost per hour (\$)	Total (\$)
5	Clerk	Greets patient and escorts to consulting area	8.00	0.67
10	Technician	Completes patient intake information and reviews list of current medications	13.50	2.25
15	Pharmacist	Interprets data and consults with patient to formulate action plan	65.00	16.25
Total				19.17

Abbreviation used: MTM, medication therapy management.

printed by an outside firm at a cost to the pharmacy of \$4.50 each. In addition, each patient in the Medi-Max program is typically provided with a medication daily dosage organizer that ABC purchases for \$1.75. The cost of each material or supply is included in step 3 of the service cost calculator (Table 2).

So, in direct variable costs alone, we have already determined that the average cost of delivering one patient encounter of the Medi-Max program at ABC Pharmacy exceeds \$25.

Equipment. For many MTM services, no equipment is needed to provide the service beyond that which would already be present in a typical pharmacy practice. In our example, ABC Pharmacy purchased a laptop computer for \$1,250 to support the Medi-Max service. How then do we allocate a portion of this capital equipment cost to each patient encounter in the Medi-Max program?

If the manager elects to expense the total cost of the laptop in the current fiscal year, then the entire cost (\$1,250) could be considered a current operating expense. In that case, it would be divided equally among all the Medi-Max patient encounters that occur during the year in which it was purchased. Alternatively, the computer could be amortized and expensed incrementally via depreciation over its expected useful life. Even if the pharmacy's accountant recommends the former, for our purposes, depreciating capital equipment and expensing it over its useful life is desirable.

When considering the capital equipment that may be needed to support a service, an important decision is whether to buy or lease the equipment. This is a judgment call and should be made in consultation with an accountant because no hard-and-fast rules exist. However, given the volume-sensitive nature of fixed costs on the per-encounter cost of service delivery, renting or leasing should be considered whenever the cost of equipment is substantial and the potential demand for the service is uncertain. The discussion below (*OTHER DIRECT COSTS*) provides an example of how fluctuations in volume can affect the amount of fixed costs that must be absorbed by each patient encounter. Anticipated patient volume therefore is a key assumption that should be challenged during sensitivity analysis. As with all the fields in the service cost calculator, the software allows the user to go back and adjust anticipated service volume, then recalculate service delivery cost. Using a best case/worst case scenario to evaluate this and other key estimates will reveal the potential impact that possible fluctuations will have on the cost of service delivery.

Depreciation is the accounting procedure used to recognize the loss in value of an asset as it wears out or is used up over time. The asset's loss of value during a particular accounting period (usually a year) is represented as a depreciation expense. To calculate depreciation expense, we need to know three things: acquisition cost (C), useful life (N), and residual value (R).

Although depreciation expense can be calculated using different approaches, the most common is called straight-line depreciation because it assumes the asset loses value at a constant rate over time. In some cases, this assumption is not technically accurate because some assets lose value faster

initially than they do in the latter years of their useful lives. However, the assumption of linearity is usually close enough and has the additional advantage of making the calculations simple and consistent. Using the straight-line method, the annual depreciation expense (D) is calculated as follows: $D = (C - R) \times 1/N$.

In our example, the acquisition cost of the computer was \$1,250, and we will assume it has a useful life of 5 years with a residual value of \$250 at the end of its useful life. Plugging these values into the above equation in step 4 of the service cost calculator, the annual depreciation expense for capital equipment used to support the Medi-Max program is \$200 (Table 3).

Unlike per-encounter variable costs, which are not affected by volume, the per-encounter impact of fixed costs is directly and sometimes dramatically affected by volume. The impact that a \$200 annual depreciation expense has on the cost of delivering each "unit" of the Medi-Max program depends entirely on the annual volume of patient encounters. For example, if ABC Pharmacy averaged five Medi-Max patient encounters per week, depreciation expense would add only \$0.77 to the cost of each (\$200 divided by 260). Alternatively, if the pharmacy averaged only one encounter per week, depreciation expense would add \$3.85 to the cost of each encounter.

The volume-sensitive nature of fixed costs becomes increasingly important as the fixed costs needed to deliver a service increase. It should go without saying that this relationship reinforces the importance of having good information about anticipated market demand for a service if significant fixed costs will be incurred to launch or support it. The fixed costs of delivering the Medi-Max service must be covered whether ABC Pharmacy delivers 1 or 1,000 patient encounters during the year.

Anticipated fixed costs also are of strategic importance when considering the specialized services to implement. If demand is questionable, a service that requires a substantial investment in fixed costs such as capital equipment may not

Table 2. Example PharmAccount cost of MTM service calculation: Materials and supplies

Material/supply	Units per encounter	Cost per unit (\$)	Total (\$)
Medication scheduler	1	4.50	4.50
Dose organizer	1	1.75	1.75
Total			6.25

Abbreviation used: MTM, medication therapy management.

Table 3. Example PharmAccount cost of MTM service calculation: Equipment depreciation expense

Equipment	Acquisition cost (\$)	Useful life (years)	Residual value (\$)	Annual depreciation (\$)
Laptop computer	1,250	5	250	200

Abbreviation used: MTM, medication therapy management.

be the best initial choice unless the equipment can be rented or leased while demand is verified. In our example, ABC Pharmacy currently averages two Medi-Max patient encounters a week, thereby adding \$1.92 (\$200 divided by 104) to each patient encounter.

Other direct costs. A variety of additional direct fixed costs may be required to support an MTM service. For example, the service may require additional training of staff or the purchase of specialized information resources that would not otherwise be present in the pharmacy. Another fixed cost that is all too commonly overlooked or underestimated is the cost of promoting the service, including staff time that is spent explaining the service to patients or area physicians.

Step 5 of the service cost calculator collects these nonsalary direct fixed costs. In our example, the nonsalary direct fixed costs required to support the Medi-Max service includes an MTM certificate program (\$150) provided by the state pharmacy association and an annual subscription to MedAware (\$260), which is a hypothetical software application that assists the pharmacist in monitoring medication adherence. Also included is an estimated 6 hours of pharmacist time (\$390) to explain the service to local physicians.

The time spent by the pharmacist to market the service in visits to area physicians may be considered a relatively “soft” cost, depending on whether it requires that replacement staff be paid. However, irrespective of how this cost is interpreted by the manager, a full-cost accounting of the service requires that it be included in the analysis (Table 4).

Distributing these fixed costs across the 104 anticipated patient encounters adds \$7.69 to the cost of delivering the service. Once again, it must be recognized that this fixed per-unit cost will fluctuate up or down in direct relation to the actual volume of Medi-Max service encounters that are delivered during the year. In this respect, the impact of fixed costs on the average cost of service delivery is especially sensitive to “scale” effects. For example, what if our anticipated patient volume for the Medi-Max service were too optimistic and we actually averaged only one patient per week? In that case, the total annual fixed costs would be distributed over only 52 encounters, which would double the per-encounter fixed cost to \$15.38. Alternatively, if our projections had been too conservative and the service averaged more than two encounters per week, then the per-encounter impact would be proportionately less than \$7.69. These volume-sensitive scale effects of fixed costs should be considered when making projections of likely demand for the service. Prudence would dictate that projections of potential volume be made conservatively and the impact of possible fluctuations are considered in the sensitivity analysis that is performed. This is another reason to recalculate the cost of service delivery on an annual basis or any time a significant change has occurred in how the service is delivered.

Overhead costs. As discussed earlier, full-cost analysis requires that every revenue-generating activity in the business absorb a fair share of indirect (i.e., overhead) expenses that are incurred to keep the business open. These costs include such things as rent (or depreciation, if the building is owned),

utilities, insurance, legal and accounting services, and maintenance for the pharmacy and any common areas it may share with other tenants.

Each indirect cost should be allocated using a rule that best reflects the manner in which the cost was incurred. In general, one of two rules is used to allocate indirect costs: (1) the proportion of total store space that is occupied by the service during operating hours or (2) the proportion of total store sales that sales of the service represent.

In step 6 of the service cost calculator, each indirect fixed expense is entered and the software application automatically allocates a portion of it to the service using the appropriate rule.

The total floor space of ABC Pharmacy is 4,000 sq ft, and the office in which Medi-Max is delivered is 120 sq ft or about 3% of the total. The pharmacy is open 50 hours a week. Because each patient encounter requires 30 minutes and the practice averages two encounters per week, the office is occupied by the service for only 2% of total operating hours.

In our example, all rent for ABC Pharmacy is paid as a fixed expense. Therefore, allocating a portion of it to the Medi-Max service based on the proportion of floor space that is occupied by the service during operating hours is appropriate. Likewise, utilities and insurance are appropriately allocated using this rule as it best reflects how these costs are actually incurred (Table 5).

In contrast, the miscellaneous category of “other overhead expenses” is best allocated on the basis of the proportion of total store sales that the service represents or is expected to represent. Because the pharmacy delivers 104 Medi-Max service encounters per year and charges \$50 for each, the annual sales of the service represent approximately 17% of the store’s \$3,000,000 annual sales. Multiplying this value by the \$5,000 “other overhead expenses” results in a total of \$8.50.

Table 4. Example PharmAccount cost of MTM service calculation: Nonsalary direct costs

Nonsalary direct cost	Annual cost (\$)
MTM certificate program	150
MedAware software	260
Marketing and promotion (\$65 × 6 hours)	390
Total	800

Abbreviation used: MTM, medication therapy management.

Table 5. Example PharmAccount cost of MTM service calculation: Overhead costs

Overhead item	Annual cost (\$)	Service area/total area	Service hours/total hours	Allocated to Medi-Max (\$)
Rent	50,000	0.03	0.02	30.00
Utilities	9,500	0.03	0.02	5.70
Insurance	12,500	0.03	0.02	7.50
Total				43.20

Abbreviation used: MTM, medication therapy management.

The resulting total of \$51.70 in overhead costs allocated to the Medi-Max program then must be equally distributed across all 104 patient encounters, thereby adding another \$0.49 to the per-unit cost of service delivery.

Of important note, this modest impact of overhead reflects an important decision by the manager to use flexible space in the pharmacy to deliver the service. If this program was the only activity for which the consulting office was being used, then the impact would be very different because the value of service hours divided by total hours would be 1.0 instead of 0.02.

Table 6 shows the average cost of delivering one patient encounter of the Medi-Max program from ABC Pharmacy. The result of our analysis tells us that the full cost of delivering one patient encounter of the Medi-Max service at ABC Pharmacy is \$35.52. Therefore, we know the pharmacy must charge more than that if it wishes to make a profit. What else does the analysis tell us?

As is commonly the case, the single biggest cost of the Medi-Max program is personnel, particularly the pharmacist's time, which accounts for \$19.17 or nearly 54% of the total. Looking for efficiencies, ABC management may consider delegating additional responsibilities to supportive personnel, if possible. The pharmacy also may consider implementing a community pharmacy residency program. Using a pharmacy resident in place of a staff pharmacist could cut the cost of the pharmacist by 40–60%.

Materials and supplies represent another substantial cost. Especially prominent is the medication scheduler at \$4.50. If the manager were able to purchase it cheaper, it would drive down the cost of delivering the service and allow more flexibility in pricing—yet another potential advantage of higher volume and the resulting economies of scale. Alternatively, eliminating this cost entirely may be possible by replacing the scheduler with a version that could be supplied electronically to the patient.

Personnel and materials/supplies are both variable costs. Therefore, justifying setting or accepting a price less than \$25 for the Medi-Max service would be difficult, just as accepting a third-party prescription program that failed to cover the drug product and the direct variable costs (e.g., vials, labels) of dispensing would be irrational.

That said, would setting or accepting a price that covered the direct variable costs of delivering a service but not all costs ever be appropriate? The answer is “maybe.”

Just as in prescription dispensing, the fixed costs of delivering a service will be incurred, and must be covered, irrespective of the volume that is actually delivered. So, if the pharmacy is constrained from charging the full cost as a result of pricing by competitors or a fixed-fee third-party contract, accepting a reimbursement rate that covers variable costs and contributes at least something to meeting the outstanding fixed costs may be acceptable in some cases, even if it does not cover total costs and generate a profit. Naturally, if the pharmacy's entire book of business consists of contracts that pay below the full cost of delivering the service, it cannot hope to make a profit. However, in selected instances, it may be a defensible strategy.

Table 6. Example PharmAccount cost of MTM service calculation: Service delivery cost report

Cost category	Cost (\$)	% of total	Type of cost (\$)
Personnel	19.17	53.97	Variable
Materials & supplies	6.25	17.60	Variable
Equipment	1.92	5.41	Fixed
Nonsalary direct	7.69	21.65	Fixed
Overhead	0.49	1.39	Fixed
Total	35.52	100.0^a	

Abbreviation used: MTM, medication therapy management.
^aMay not total 100% due to rounding.

Breakeven analysis

As discussed above, volume is an important consideration in pricing a service because it is a key determinant of cost. Given our cost analysis for Medi-Max, a question the manager might ask is, “How much volume do I need to make a profit at a given price?” To answer this question, we must perform a breakeven analysis: sales – variable costs – fixed costs = 0.

As the name implies, the breakeven point is that volume at which the pharmacy begins to make a profit. Using our example above, the manager has set the price for Medi-Max at \$50 per encounter. How many encounters does the pharmacy need to deliver in a year in order to breakeven at this price?

Plugging values from our cost analysis into the above equation results in the following: $\$50 N - \$25.42 N - (\$10.10 \times 104) = 0$. Solving for our volume (N), we find the following: $\$24.58 N = \$1,050.40$, and $N = 42.7$ units.

So, at a price of \$50 per encounter, ABC Pharmacy must deliver 43 patient encounters per year to breakeven on the Medi-Max service as it is currently designed and delivered. Stated differently, assuming the pharmacy averages two encounters per week, it will take about 22 weeks of business each year to begin turning a profit on the Medi-Max service at a price of \$50.

In this way, breakeven analysis provides the manager and staff of ABC Pharmacy with a sales goal for the service at any given price. Naturally, if demand for the Medi-Max service were sufficiently high and competition were low, then the manager may be able to increase the price and the breakeven point would be achieved quicker. Alternatively, the manager could examine the delivery costs of the service for possible ways to reduce costs and deliver the service more efficiently and/or price it more competitively.

To use the online service cost calculator free of charge, follow these steps:

- Go to www.pharmaccount.com
- On the homepage, click on the login tab at the top
- Click on the “Register for PharmAccount Service Now” link
- In step 1, click on “U.S. Pharmacist without an NABP/NCPDP Pharmacy”
- In step 2, complete required fields of information marked by a red asterisk, then click “Continue”
- Complete step 3 and click “Continue”
- Confirm information and click “Continue”

- Select “Yes” to Privacy Statement and License Agreement, then click “Continue”
- For step 4, create a username and password, then click “Continue”
- Confirm (and write down) your username and password, then click “Continue”
- At “Choose Option,” select “Start a new survey,” then click “Continue”
- When asked if you are a member of a group that is eligible for discounted pricing, select “Yes” and enter the six-digit identification code 100020, then click “Continue.” This code will be active until April 15, 2012.
- On “Select Product” screen, select Service Cost Calculator, then click “Continue.”
- On “Welcome to PharmAccount” screen, you may print a worksheet to assist you in compiling information for the Service Cost Calculator, then click “Begin Survey”
- After entering service data in steps 1–6, select “Stop and Check out” in step 7, then click “Continue”

At that point, you will be able to view and print your Service Cost Report. To assess how costs would change under different scenarios, you may return to the survey and change any data, then generate a new report as often as you like. In this way, the calculator becomes a useful service design and planning tool that allows the user to assess the effect of altering virtually any aspect of service delivery or estimated cost.

Conclusion

Many reasons exist for community pharmacies to implement value-added services, and profitability may not be the most important consideration. Still, good management requires that the cost implications of decisions are known and considered. Analyzing the cost of service delivery is an important step in designing an MTM service and determining the best manner in which to price and deliver it.

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CPE information

To obtain 1.0 contact hour of CPE credit (0.1 CEUs) for this activity, complete and submit the CPE exam online at www.pharmacist.com/education. A Statement of Credit will be awarded for a passing grade of 70% or better. You will have two opportunities to successfully complete the CPE exam. Pharmacists and pharmacy technicians who successfully complete this activity before April 15, 2012, can receive credit.

Your Statement of Credit will be available online immediately upon successful completion of the CPE exam.

CPE instructions: Get your documentation of credit now! Completing a posttest at www.pharmacist.com/education is as easy as 1-2-3.

1. Go to Online CPE Quick List and click on the title of this activity.
2. Log in. APhA members enter your user name and password. Not an APhA member? Just click “Create one now” to open an account. No fee is required to register.
3. Successfully complete the CPE exam and evaluation form to gain immediate access to your documentation of credit.

Live step-by-step assistance is available Monday through Friday 8:30 am to 5:00 pm ET at APhA Member Services at 800-237-APhA (2742) or by e-mailing InfoCenter@pharmacist.com.

CPE exam

Instructions: The assessment test for this activity must be taken online; please see “CPE information” on previous page for further instructions. There is only one correct answer to each question. This CPE activity will be available online at www.pharmacist.com no later than April 30, 2011.

1. **Which of the following is a cost attributable to a particular medication therapy management (MTM) service that increases in direct proportion to service volume?**
 - a. Indirect fixed cost
 - b. Direct fixed cost
 - c. Indirect variable cost
 - d. Direct variable cost
 - e. Marginal opportunity cost
2. **Which of the following is not a cost of delivering MTM services to patients?**
 - a. Salary, wages, and benefits of service personnel
 - b. Materials and supplies consumed
 - c. Cost of specialized equipment used
 - d. Indirect and overhead costs
 - e. Profit
3. **Which of the following is a cost attributable to a particular service that does not vary in proportion to service volume?**
 - a. Indirect fixed cost
 - b. Direct fixed cost
 - c. Indirect variable cost
 - d. Direct variable cost
 - e. Marginal opportunity cost
4. **In calculating the cost of delivering an MTM service from a typical community pharmacy, personnel time is most appropriately considered:**
 - a. An indirect fixed cost.
 - b. A direct fixed cost.
 - c. An indirect variable cost.
 - d. A direct variable cost.
 - e. A marginal opportunity cost.
5. **A pharmacist who compares the cost of delivering an MTM service to previous calculations of the same service in the same pharmacy is using:**
 - a. Trend analysis, an internal standard.
 - b. Benchmarking, an internal standard.
 - c. Trend analysis, an external standard.
 - d. Benchmarking, an external standard.
 - e. Extrapolation.
6. **Costs that would be incurred by a pharmacy even if a particular MTM service were not offered are called:**
 - a. Fixed costs.
 - b. Variable costs.
 - c. Direct costs.
 - d. Indirect costs.
 - e. Opportunity costs.
7. **When one deducts the variable costs of delivering an MTM service from the sales/fees received for the service, the resulting value is called:**
 - a. Net income.
 - b. Gross margin.
 - c. Operating expenses.
 - d. Return on investment.
 - e. Contribution margin.
8. **When one deducts the fixed costs of delivering an MTM service from the contribution margin, the resulting value is called:**
 - a. Net income.
 - b. Gross margin.
 - c. Operating expenses.
 - d. Return on investment.
 - e. Opportunity costs.
9. **The accounting procedure that is used to recognize the loss in the value of an asset as it wears out or is used up over time is called:**
 - a. Discounting.
 - b. Downgrading.
 - c. Devaluation.
 - d. Depreciation.
 - e. Dollar cost averaging.
10. **Capital equipment purchased exclusively to support the delivery of a particular MTM service would be considered:**
 - a. An indirect fixed cost.
 - b. A direct fixed cost.
 - c. An indirect variable cost.
 - d. A direct variable cost.
 - e. A marginal opportunity cost.