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applying the ABCs in provider organizations

By using activity-based costing to understand their true costs, healthcare providers can avoid many potential pitfalls that can result from using traditional costing methods.

AT A GLANCE

- > Activity-based costing (ABC) is an accounting technique designed to guard against potentially serious financial problems that can arise when an organization's accounting costs deviate significantly from its actual costs.
- > In general, an ABC analysis considers two factors: a *cost element* (a directly measurable unit of cost, such as the cost of an item) and a *cost driver* (a directly measurable feature of the service, such as how often the item is used).
- > ABC is best applied to specific service areas, or *service packages*, for which consumption of resources is largely predictable and atomic units of services can be accurately identified.

With healthcare reform and the expansion of the individual insurance market, opportunities for providers to shift cost to manage profitability will diminish. Initiatives such as the transition to ICD-10 and the programs administered by the Centers for Medicare & Medicaid Services (CMS) to encourage meaningful use of electronic health records and promote the formation of accountable care organizations (ACOs) will intensify the operational and financial strains on both hospitals and physician practices by demanding investments and changes in the payment model. Visibility into cost of service and cost control are critical for ACOs, given that the payment model involves shared cost savings, with participating providers qualifying for bonus payments only if they meet quality and cost benchmarks.

Proactively managing profitability requires adopting advanced techniques, such as activity-based costing (ABC), to understand the true costs of services being provided, particularly before signing new or amended payer contracts. A hospital can erode its profitability by unknowingly agreeing to payment levels that are below true costs. Yet hospital finance leaders who are not aware of the significant differences that can exist between accounting costs and true costs can inadvertently put their organizations at risk of such an outcome.

Accounting costs are particularly likely to deviate from true costs in the hospital setting, where there tends to be broad acceptance of historical charges for services without clear visibility into cost of service delivery. The true or economic cost of a service is calculated by valuing and summing all of the real cost components "consumed" to deliver a service. By contrast, accounting costs are mathematically derived, and their divergence from true cost is often due to inherent limitations in the formula used to calculate them, which can lead to potentially serious flaws in decision making.

ABC 101

ABC is an accounting technique designed to guard against these types of errors. Many hospitals use accounting costs as the basis for the charges loaded into their chargemasters. To determine these costs, a hospital might, for example, add a small percentage each year to the previous year's costs or apply a mathematical formula with an outdated accounting of all of a department's fixed costs. Either of these approaches can cause the hospital's costs, as reflected in the chargemaster, to deviate considerably from true costs over time.

Using ABC, hospital finance leaders build or refresh a model each year to ensure service costs reflect true costs as nearly as possible. ABC generally hinges on the use of two important terms: the *cost element* and the *cost driver*. The *cost element* is a directly measurable unit of cost, such as cost of a piece of paper. The *cost driver* is a directly measurable or observable feature of the service provided to a patient, such as the number of pages in a discharge report. Using ABC, the cost of providing a discharge report—assuming that paper was the only thing “consumed” to write the report—would be simply the number of pages (cost driver) multiplied by the cost of a sheet of paper (cost element).

The exhibit on page 3 provides an example of how to use cost elements and cost drivers to calculate costs, assuming the elements and their drivers are known. In this example, the costs of three prescriptions are calculated using both ABC and a traditional approach called the *markup method*. The ABC method attempts to capture the cost that conforms to the actual effort required to fill a prescription, while the markup method does not.

Using ABC produces different results for each of the prescription drugs shown. In this example, the calculated cost of a fulfilled aspirin prescription is identical using both methods, but the calculated costs for the controlled substance and the uncommon medication are quite different between ABC and the markup method. It is important to note that, whatever method is used, the costs reflected in the calculations should correspond with the same cost items in question.

In this example, although the purchase cost for prescription B (\$10) is less than that for prescription A (\$500), when the ABC technique is applied and overall service cost is calculated, prescription A proves less costly than prescription B (\$3,872 versus \$7,167, respectively).

Implications of Using ABC

Let's assume that, in the example, a physician could prescribe prescription A or B to the patient with equal efficacy and safety. Under the common markup method, the physician would be inclined to choose B. After all, the “cost” of drug A is 10 times that of B. Under ABC, the cost of prescription A is about half the cost of B. This example has many implications.

The first major implication is simple dollars and cents: The hospital is billing \$1,000 for the prescription and getting paid 85 percent or \$850. The true cost of filling that prescription is \$7,167 (This cost includes the cost of pharmacist time to fill prescription plus the cost for secure storage, the handling cost for prescription, and the dispensing cost for drug review.) Therefore, the hospital is losing \$6,317 each time it fills this prescription, and doesn't know it.

The second major implication is in contracting. A payer with strong actuarial capability and insight into ABC cost figures will negotiate a contract quite differently from one that does not bring these capabilities to bear. When the hospital presents to such a payer the charges for prescriptions A, B, and C during contract negotiations, the following possible outcomes are likely:

- > For prescription A, the payer proposes a \$5,000 contracted price, which the hospital perceives as too low; the hospital instead goes with prescription B, giving up about \$1,200 in profit.
- > For prescription B, the hospital sees the \$1,000 contracted price as a great opportunity, accepts it, and encourages use of the pharmaceutical, while unknowingly losing more than \$6,000 each time it is prescribed.
- > For prescription C, the hospital accepts the \$100 contracted price, which is in line with real costs.

COMPARISON OF ACTIVITY-BASED COSTING (ABC) WITH MARKUP TECHNIQUE FOR CALCULATING THE COST OF A PRESCRIPTION DRUG

	Prescription A A Controlled Substance	Prescription B Uncommon Medication	Prescription C Aspirin
Pharmacist Cost per Minute	\$50	\$50	\$50
Secure Storage Cost per Pill	\$1	\$1	\$1
Handling Charge per Prescription	\$15	\$15	\$15
Dispensing Charge per Bottle	\$2	\$2	\$2
Purchased Cost per Pill (Look Up in System)	\$500	\$10	\$0.25
Drug Review Cost per Minute	\$20	\$20	\$20
Average Pharmacist Time to Fill Prescription	15 minutes	120 minutes	0 minutes
Secure Storage Required?	Yes	No	No
Number of Pills	5	25	100
Number of Bottles	1	1	0
Expected Review Time	30 minutes	45 minutes	3 minutes
Calculation			
1. Cost of Pharmacist to Fill Prescription (Time to Fill × Pharmacist Cost per Minute)	\$750	\$6,000	\$0
2. Secure Storage Cost (Number of Pills × Secure Storage Cost per Pill)	\$5	\$0	\$0
3. Handling Charge of Prescription	\$15	\$15	\$15
4. Cost of Pill Bottle (Number of Pills × Cost per Pill)	\$2,500	\$250	\$25
5. Cost of Drug Review (Time for Drug Review × Drug Review Cost per Minute)	\$600	\$900	\$60
6. Dispensing Charge per Bottle	\$2	\$2	\$0
Cost Using ABC (Sum of 1 through 6)	\$3,872	\$7,167	\$100
Traditional 300 Percent Markup (Cost of Pill Bottle + [3 × Cost of Pill Bottle])	\$10,000	\$1,000	\$100
ABC Cost Versus Markup Cost Variance (Cost Charged to Patient – Total Cost Using ABC)	\$6,128	(\$6,127)	\$0

The third major implication is in flawed decision making. Over time, the missed profit opportunity with A compounded with the losses of B might begin to erode the financial viability of the pharmacy. The senior finance leader's efforts to counter this effect might be to go for a higher markup on all drugs to recoup the losses. But this markup may not be enough to address the problem with prescription B, and by artificially inflating the cost of prescription A, it actually

would encourage wider usage of prescription B. Meanwhile, prescription C becomes more expensive and the hospital loses cost competitiveness.

Strategic Impact of ABC

To demonstrate the strategic impact of ABC, let's consider a real-world example of its application to determine which of a facility's departments were profitable and which were not ahead of a contract renegotiation with the facility's largest

customer. The facility was losing 2.5 percent of earnings before interest, taxes, depreciation, and amortization (EBITDA).

After about six months of ABC model building, the facility was looking at a new cost structure that prompted quick action. First, the facility rescinded a \$50 million investment proposal for a department that the ABC method disclosed was clearly bleeding cash. The department and all of its associated costs were sold quickly to a local competitor. The new cost structure also revealed that a department that had been largely overlooked due to its relatively small revenue had actually been taking in enormous profits, so the facility invested in developing the department. Aside from dramatic reversals in attitude and investment, the facility also was able to reevaluate many large contracts and quickly identify which to pursue and not pursue.

Structured Approach for ABC

The best way to implement ABC is to apply it to specific service packages for which consumption of resources is largely predictable and atomic units of services can be accurately identified. (*Service packages* are medical services or procedures that typically require reasonably consistent and predefined sets of services, bed-days, pharmaceutical consumables, and medical equipments. Examples include cataract surgery, C-section delivery, and appendectomy.)

For each of these service packages, all cost elements must be identified, including, for example:

- > Time invested by physicians, nurses, and other staff
- > Pharmaceutical consumables cost

- > Medical equipment utilization cost
- > Infrastructure cost

Historical data for the services can help identify average unit consumption of various cost elements of a service package, and cost can be benchmarked.

On an ongoing basis, the organization should monitor the variances in the service package's cost and perform root-cause analyses of variance. Based on the top few root causes of variances in the cost of the service packages, a service package can be broken down into two or more service packages that are likely to have lesser variance from the benchmark. For example, a cataract operation service package can be broken down into cataract operation for a nondiabetic and for a diabetic patient. Providers need to continuously reassess variances from benchmark cost and redefine services until an acceptable level of variance is achieved.

As another example, ABC analysis could be performed on groups of services with the same DRG. The analysis could obtain the average cost per DRG, based on case mix, for comparison with the payment received for the DRG to highlight potential financial problem areas.

The complexity of implementing ABC will vary for different types of provider organizations, as shown in the exhibit below.

ABC adoption is likely to affect many current provider processes, including management and reporting of clinical processes, the revenue cycle, the supply chain, and human resources. In preparation for accountable care, processes must

RELATIVE COMPLEXITY OF IMPLEMENTING ABC FOR DIFFERENT TYPES OF PROVIDER ORGANIZATIONS

Physician Practice	Hospitals	Accountable Care Organizations (ACOs)
Except for some specialties, it is simpler to perform an ABC analysis of service packages because there is the least cost variation per service package.	It is more complicated to perform ABC analysis in a hospital, given the large spectrum of services offered and high variability in resource consumption for surgery and inpatient services.	Implementing ABC is the most complicated in ACOs, due to variability in cost of services compounded by differences in cost structure of participating providers.

change to facilitate bundling of visits into accounting episodes.

For example, instead of billing for every patient visit, billing will have to be done for all visits related to a single disease episode. Thus, for four hospital visits related to an episode of, say, jaundice, a single bill must be issued as opposed to four separate bills. It also is necessary to track cost per episode against payments, optimize supply chain management to reduce services costs, and perform micro-level tracking of staff time distribution across various cost elements.

Equally important is investing in the business intelligence capability for historical data mining to create service packages, statistical analysis to identify statistically relevant parameters that are contributing to cost variation in a particular service package, and predictive modeling of cost savings by reducing a particular cost element or a set of cost elements.

Several parameters can lead to variations in cost of service packages, including variations in post-operative prescription requirements, surgical blood consumption, medical equipment usage, nosocomial infections leading to additional bed-days, and variations in recovery path based on age, gender, and race. Many of these parameters are driven by medical necessity and are beyond control of hospital management. But some can be managed.

For example, a young patient may require less medication and a shorter hospital stay than a senior citizen for a certain type of surgery. To illustrate, let's say that surgery A costs hospitals, on average, \$10,000 for patients between ages 20 to 50 and \$15,000 for patients over age 60 years. If the hospital offers a common service package irrespective of the patient's age, its profitability will depend on the age-mix of patients receiving the surgery. Although a service package price of \$17,000 could help the hospital avoid a loss, that price would be noncompetitive price for young patients, whereas a service price of less than \$15,000 could result in a loss for surgeries

performed on senior patients. In such instances, where age is leading to variability in costs, hospitals can define different service packages for different age groups.

Also, if the hospital identifies many cases where cost variations are due to nosocomial infections, it can plan stringent infection control protocols to minimize such cases. Complex decision support tools allow trolling of huge amounts of data to identify the parameters impacting cost. However, smaller hospitals need not invest in costly analytical solutions to benefit from this approach.

Brainstorming sessions and focus groups among experienced medical staff can often help in identifying cost parameters that are variable and can be effectively controlled.

The ABC Process: A High-Level View

As with any large change effort, starting with a pilot makes sense. An ABC pilot can be executed meaningfully and safely within a single department. The department with a limited number of service types and with little variability from patient to patient would be a good choice for a pilot. The radiology department is a good example. Consider the following high-level description of the steps required for an ABC analysis in this department.^a

Step 1: Seek approval from the senior finance leader and department head to start the ABC pilot. An accountant also will be required to support the analysis.

Step 2: Collect general ledger (GL) account expenses for all types of costs related to the department. It is important to include all employee and benefit expenses, capital equipment depreciation and rental charges, direct supplies and indirect supply allocations, and service vendor expenses are included. The assigned accountant and the department head can help ensure that all necessary expenses are collected.

a. The steps listed here are intended only to illustrate the overall flow of an ABC analysis, and not to be a comprehensive implementation guide.

SAMPLE ASSIGNMENT OF COSTS TO RADIOLOGY SERVICE LINES

Step 2: Collect GL costs.	X-Ray	MRI	CT	Mammography	Ultrasound
Labor-related	\$750,000	\$1,312,500	\$2,953,125	\$150,000	\$187,500
Supplies-related	\$300,000	\$55,000	\$123,750	\$60,000	\$75,000
Depreciation	\$225,000	\$393,750	\$885,938	\$45,000	\$56,250
Services-related	\$150,000	\$262,500	\$590,625	\$30,000	\$37,500
↓ Hospital allocations	\$105,000	\$653,750	\$1,519,813	\$21,000	\$26,250
Step 3: Calculate total for cost component.					
↓ Total	\$1,530,000	\$2,677,500	\$6,073,250	\$306,000	\$382,500
Step 4: Determine fixed and variable costs and order volumes.					
Fixed	\$330,000	\$1,047,500	\$2,405,750	\$66,000	\$82,500
Variable	\$1,200,000	\$1,630,000	\$3,667,500	\$240,000	\$300,000
Last year order volume	10,000	5,000	3,500	10,000	10,000
Next year order volume	11,000	6,250	3,150	10,000	11,500
↓ Total next year costs	\$1,650,000	\$3,085,000	\$5,706,500	\$306,000	\$427,500
Step 5: Compare new per order costs with charges in chargemaster.					
Next year cost per order	\$150	\$494	\$1,812	\$31	\$37
↓ Current chargemaster	\$250	\$500	\$1,000	\$100	\$100
Step 6: Evaluate profitability.					
↓ Profits	\$1,100,000	\$40,000	(\$2,556,500)	\$694,000	\$722,000
Step 7: Set future plans based on analysis.					
	Encourage	Fix allocations	Target for intervention	Increase volumes	Increase volumes

Step 3: Organize all costs into high-level cost components. For simplicity, each piece of radiology equipment or equipment group—that is, each radiology service package (e.g., X-ray)—can be taken as a cost component. All GL expenses should be assigned to each of these service packages. Direct expenses, such as depreciation, can easily be applied directly. Many indirect expenses, such as maintenance expenses, must be assigned to the service packages using cost drivers, such as cost of electricity and cost of facility maintenance.

Step 4: Determine volumes on each service package from the previous year, and identify fixed and variable costs. The fixed costs will remain the same irrespective of the number of orders.

Step 5: Calculate new per order costs for each service package and compare those costs with charges currently loaded in the chargemaster. If there are major discrepancies, it will be necessary to work with

the accountant to review cost and verify that the analysis is complete.

Step 6: Evaluate profitability by service package to identify areas requiring further analysis or immediate action. In this example, the computed tomography (CT) service stands out as being particularly unprofitable. Note: Departmental net profit generated under the ABC costing method should be equivalent to the current accounting method when the same overall costs and revenues are evaluated in a single department. Overall departmental profitability can change only when hospital allocations to the department are also evaluated and adjusted through ABC.

Step 7: Determine future actions based on analytical finding. For ABC analysis to be truly worthwhile, the organization should develop and implement specific plans based on the information about costs and profits disclosed in the analysis. In the example, the X-ray, mammography, and

ultrasound service packages are all strongly profitable and should be encouraged. Magnetic resonance imaging (MRI) requires further investigation. CT appears to be in significant distress, however, and clearly should be targeted for immediate intervention, through both contract renegotiation and intensive cost reduction.

Looking into the Future

The importance of ABC becomes apparent if one considers, again, the changes that ICD-10 and ACOs will bring to hospitals and physician practices. ICD-10, for instance, promises to arm policy and decision makers with better quality information about a patient's clinical condition to administer better-targeted treatments. Finance leaders should understand that the increased specificity about clinical conditions and services will create a need for greater specificity in payment rules and levels, potentially creating problems for organizations that do not understand their true costs.

In some instances, single ICD-9-CM codes are being mapped to more than a dozen ICD-10-CM codes, and in other instance, single ICD-10-CM codes can represent multiple ICD-9-CM codes. The transition poses challenges not only for coding, but also for contracting and, by extension, costing. Hospitals renegotiating contracts that will survive beyond October 2013 need to consider whether the payment models their payers propose for ICD-10 will actually cover their costs and by how much. Now is the time to apply ABC methodologies to

uncover the true cost of service and to organize the cost calculations around ICD-10 codes. Hospitals that do not prepare for ICD-10 contract negotiation by understanding their costs under the new code set could encounter serious financial problems if, as a result, their charges do not reflect actual costs.

ACOs pose a similar challenge. The ACO mandate is to improve the coordination of care to reduce costs over a complete episode of care. In theory, an ACO can eliminate systemic waste simply by improving coordination. But hospitals, clinics, and physician practices can expect that an ACO will want price concessions on certain services. Knowing the true cost of the services it renders allows a facility to enter into an ACO contract with confidence that it fully understands the financial impact of the relationship.

Adopting ABC as the method for calculating service costs requires a substantial commitment, and it could challenge long-held beliefs, habits, and priorities. Nonetheless, the benefits gained from better understanding the organization's actual costs make it well worth the effort. ■

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