

COVER STORY

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measuring and managing patient profitability

Activity-based costing is an imperative for health systems seeking to ensure the profitability of their enterprises under value-focused health care.

U.S. healthcare providers are under tremendous pressure today—both from the government and from commercial health plans—to deliver value. This pressure is a consequence of today's dramatic transition away from the nation's long-standing revenue-driven healthcare system and its often-irrational pricing. To respond effectively, hospital and health system leaders require intelligence and creativity to manage their expenses and make fine-tuned investments of time and resources that will ensure success in a fee-for-value world.

An essential goal of the transformation is to create incentives for providers to deliver value for patients in the form of high-quality services delivered at the lowest possible cost, with sensitivity to the patient experience. To this

end, healthcare providers should view patients similarly to the way commercial companies view customers. To remain competitive, providers must determine how to serve patients more efficiently and keep them and their families returning to their delivery systems to satisfy medical needs throughout their lives. Achieving this goal requires a focus on maintaining high-quality service while growing revenue and controlling costs. Unfortunately, many healthcare providers' efforts are impeded by the use of management accounting practices from the 1960s that are not effective for this purpose.

Hospital and health system leaders have another strategic imperative under value-based care: to focus on maintaining profitability at levels necessary to sustain their organizations' missions. Simply put, the ability of a hospital or health system to succeed in this new world will depend on the extent to which its finance leaders can effectively transform the organization's cost structures.

For this purpose, finance leaders must pay closer attention to the middle line (costs), not just the top line (revenues), when working to improve the bottom line (profits), with a primary goal being to close the gap between the agendas of the financial and clinical staffs by building a bridge between patient outcomes and the pricing, costs,

AT A GLANCE

- > Under value-based payment models, it is critical for healthcare providers to be able to understand the relative profitability of the treatments and procedures they deliver to different patients and patient types.
- > Providers face a challenge in being compelled by their missions to deliver services at a financial loss to certain groups of patients.
- > To mitigate such losses, providers should develop the capability to perform activity-based costing analyses, which provide the best means for ascertaining how to manage costs for all patient groups while ensuring the organization's overall profitability.

and profits to achieve those outcomes. An effective means for identifying a healthcare organization's greatest potential growth areas as it increasingly focuses on value-based care models is activity-based costing (ABC), described below.

Value from the Patient and Provider Perspective

People tend to want value in return for whatever they exchange for the value. Customers and patients conclude they receive value if the benefits received from a product or service meet or exceed what they are expected to pay for it. But as noted previously, provider organizations also must obtain value from their efforts to maintain the level of profitability necessary to sustain their missions, satisfy their stakeholders' financial expectations, and grow their organizations. As the model of health care shifts focus from fee for service to fee for value, providers cannot ignore the impact of unprofitable patient services on their organizations. Indeed, no value-focused strategy can be effective without including an in-depth analysis of this impact.

Moreover, the analysis is likely to find that discontinuing an unprofitable service is simply not an option—because it is core to a provider's mission, for example, or it satisfies a critical need for the community. In such instances, the provider must be prepared to absorb the financial loss while taking steps to mitigate it and hoping to benefit from the goodwill the provider garners from delivering the service.

Consider, for example, that labor and delivery services often operate at a financial loss. Yet there also is a widely held belief that mothers will return for additional services in the future and might influence the whole family to stay in the health system. This idea may be nice in theory, but most health systems' management accounting

systems would be challenged to validate the assumption.

Unfortunately, many hospital management accounting practices and systems cannot report services, treatments, procedures, and patient profitability information to the extent required for this purpose. Without reliable and accurate accounting information, they have a limited ability to support analyses aimed at determining which types of patients should be targeted for retention and growth strategies. Commercial companies refer to this type of analysis as *customer rationalization*. Hospitals need similar thinking—i.e., *patient rationalization*.

To embark on an effective value-focused strategy, providers must be able to differentiate their healthcare services with an eye to containing costs while improving outcomes. With traditional management accounting's emphasis on only the costs of treatments, managers can't see the total income statement picture, including all the profit margin layers that exist below what commercial companies refer to as the *product gross profit margin line* (e.g., distribution and customer service expenses). What they require is reporting information from all patient-related expenses, including nonstandard patient services and payment behavior. Ultimately, a profit-and-loss (P&L) statement should be measured and reported for each patient stay and, better, across each patient's history within the health system.

Positive- Versus Negative-Margin Patients

A patient rationalization analysis begins by addressing three questions:

- > Which patient services (where the term *services* includes treatments and procedures) are unprofitable, and what is their impact on the health system's profit margins?
- > Which patient services are highly profitable, and to what extent do profits from these services

offset the losses incurred from unprofitable but necessary patient services?

- > How should the difference between these types of services be defined and managed?

Once these questions are answered, the analysis turns to a more critical line of inquiry consisting of two primary questions: What corrective actions should healthcare leaders and staff take to address the unprofitable services and improve the overall profitability of the health system? And how should those action items be prioritized?

Again, it is expected that expenses for certain types of patients will exceed their revenues. That is a policy and community issue. But at least the hospital should know the magnitude of this deficit spending and which types of patients are associated with the financial shortfalls. Conversations with clinical staffs can be a good starting point, because they know, from their day-to-day experiences, which types of patients tend to take up more of their time, and they therefore intuitively understand the difference between highly profitable and highly unprofitable patients.

Another important step is to categorize patient types—for example, by treatment, service, financial class, age group, gender, primary service area (PSA), ZIP codes, comorbidity, diagnosis,

procedure, and even socioeconomic factors (e.g., social determinants of health). In today's rich healthcare data environment, the list of patient categories is immense, providing countless ways to consider, understand, analyze, and ultimately manage patient profitability.

Analysis of Patient Profitability: Practical Objectives

The ultimate aim of the patient profitability analysis is to identify the right mix of patient types and service volumes that will enable the organization to grow profitable volume. The exhibit below depicts a simple way by which a health system can see how profit margin opportunities differ with different service lines. Although this hypothetical health system, which we call Happy Health System, has a large market share in Service Line A, at 73 percent, the profit margin per case seems more promising with Service Line C. This information suggests it may be worth researching the viability of staffing up this area to attract volume from the health system's competitors—and thereby increase its market share.

In commercial companies, some customers purchase only a mix of products with primarily low-profit margins. The same is true for patients accessing low-profit services—including extra services that are medically necessary. For

HAPPY HEALTH SYSTEM: MARKET SHARE MARGIN OPPORTUNITY*

Service Line	2016 Total Market Potential	2016 Provider Cases	Potential Yield	Provider Market Share	Estimated Margin/Case	Contribution Margin Opportunity
Service Line A	4,876	3,560	1,316	73%	\$1,500	\$1,974,000
Service Line B	1,642	873	769	53%	\$800	\$615,200
Service Line C	1,398	44	1,354	3%	\$7,500	\$10,155,000
Service Line D	2,677	990	1,687	37%	\$5,000	\$8,435,000
Service Line E	2,724	1,117	1,607	41%	\$50	\$80,350
Service Line F	561	202	359	36%	\$2,500	\$897,500

← Maintain or slow efforts.

← Further develop service line.

*Assumes contribution margin rates and payer mix are similar for the potential volumes

example, a diabetic patient requires a higher level of care than a nondiabetic patient (all else being equal) due to dietary requirements and other medical considerations.

Commercial companies have a recourse that is not available to healthcare providers: They can deselect demanding, costly customers who perpetually deviate from schedules, return goods, and demand special services while showing no promise of ever being profitable. By contrast, healthcare providers always must incur costs for patients regardless of the existence or type of insurance coverage.

When patients are associated with higher profits, it typically is for two reasons, which can occur separately or in combination: The patient's payer may be paying at a higher level, and the patient may have a noncritical condition requiring a predictable level of care. The patients who incur the greatest cost and whose care reduces profit margins are uninsured or underinsured and require high maintenance and a higher level of care.

Once profitability is measured, reported, and exposed at the patient and service-line level, clinical and financial staff should discuss potential opportunities to make operational, financial, or clinical adjustments that can improve profitability while maintaining or increasing patient outcomes and satisfaction.

The organization's goal should be to measure the levels of profitability for all patients, so they can be migrated toward higher profits using "profit margin management" techniques. Making an unprofitable patient less unprofitable by \$1,000 is equivalent to making a profitable patient more profitable by the same \$1,000.

The key to finding effective means to reduce costs is to use data effectively. If for a certain type of patient, for example, a commercial health plan is consistently paying a lower rate than other health plans for the same service, then the provider may consider renegotiation of the payment rate. But first, the provider should collect the necessary patient-level cost data to calculate and report the actual costs incurred for that type of patient.

If an age group, gender, or ZIP code tends to be less profitable, data analysis can help determine the reason—whether it is a cost issue, a collection issue, or both, and whether social factors such as English as a second language (ESL) and lack of transportation are contributing factors. Solving problems begins with identifying high-cost cases, asking a lot of questions for needed discussions, and finding common denominators.

Ultimately, provider organizations require improved management accounting to begin to understand and transform the high costs of unprofitable services, treatments, and procedures. Simply put, what is required is ABC.

ABC: A Multilevel Cost Reassignment Network

ABC is the accepted method for economically and accurately tracing the consumption of a health system's resource expenses (e.g., labor, supplies) to treatments, procedures, and patients—and to the types of channels and delivery segments that place workload demand on a facility. In a value-focused healthcare system, providers require such a rational system for assigning so-called nontraceable expenses that are consumed as costs to their origin as spending. Yet many healthcare facilities continue to offer excuses for not using ABC. The following examples may sound familiar:

> We are profitable, so why does it matter?

- > We already know our “true” costs from our general ledger financial-reporting system.
- > We have always done it this way, so we already know what we need to know.
- > We are a small hospital—we’ll worry about better costing methods when we get larger.
- > We cannot afford the better software it requires.
- > We are too busy doing other things.

All excuses aside, it simply should no longer be acceptable for providers not to adopt ABC.

Consider the benefits: ABC uses multiple stages to trace and segment all the *resource expenses* as calculated costs through a network of cost assignments, or *work activities*, into the *final cost objects* (e.g., diagnoses, procedures, treatments, services, distribution channels, patients). It facilitates more accurate reporting because it focuses on the cause and effect within expense consumption relationships. It answers not only *what* staff are doing but also, more important, to *what extent* they are doing it and *why*.

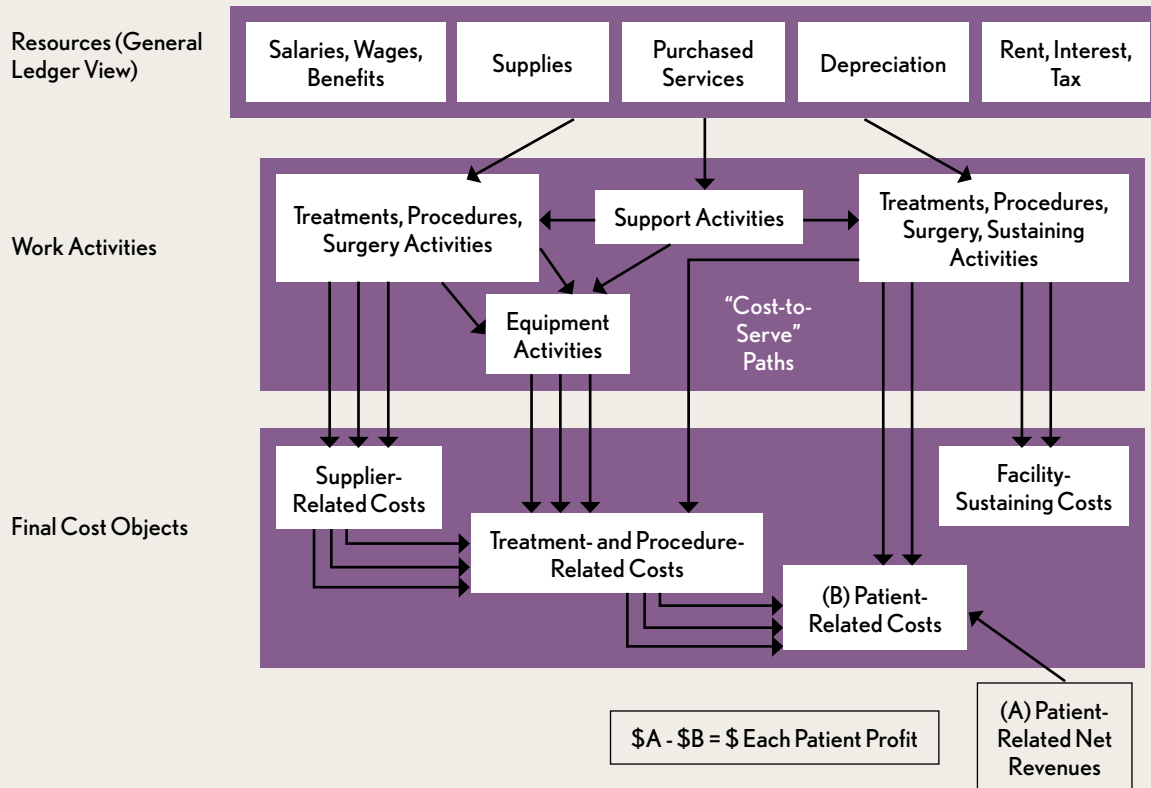
ABC software is arterial in design, flowing calculated costs flexibly and proportionately from the general ledger view of resource expenses to views of how and why those resource expenses are consumed. Eventually, via this expense assignment and tracing network, ABC reassigns 100 percent of the resource expenses into the final accumulated cost objects of treatments, procedures, services, materials, channels, patients, and facility-sustaining work. Visibility of costs for a given period (e.g., a month) is provided throughout the *cost assignment network*, including showing how costs are “driven” by *activity cost drivers* within the cause-and-effect relationships. This visibility aids in identifying where to focus improvement efforts. Traditional costing allocates costs with “cost factors,” like spreading butter on bread, and thus violates costing’s *causality principle*.

Consider the simplified ABC cost assignment network in the exhibit on page 6, which consists of three modules connected by cost assignment paths. Imagine the cost assignment paths as wide pipes and thin straws where the diameter of each reflects the amount of cost flowing. The power of an ABC model is that the cost assignment paths and their destinations trace costs from beginning to end—from resource expenses to each type of treatment and service and, ultimately, to patients (even to each specific patient). Moreover, patients also constitute the true origin of the costs because all expenses originate with a demand-pull from patients—and the calculated costs simply measure the consumption effect in meeting that demand.

ABC Cost Assignment

The first step in ABC modeling is to identify resources and their expenses, shown at the top of the cost assignment network in the exhibit on page 6. Resources represent the available capacity to perform work, made possible by cash exiting the treasury to cover expenses such as procurement purchases and employee payroll. Examples of resources are clinical and nonclinical staff, medical supplies, and fixed assets. (Amortized cash outlays, such as for depreciation from a prior period, also can be modeled.) It is during this step that *resource cost drivers* are identified and measured as the mechanism to convert resource expenses into work activity costs. A resource cost driver is the amount of a given resource consumed to perform a work activity. One basis for tracing or assigning resource expenses is the time (e.g., number of minutes) that people or equipment spend performing work activities. All cost assignments in the cost assignment network must normalize to 100 percent whether one uses staff time, quantities of the driver (e.g., amount of supplies consumed), or percentage estimates from knowledgeable employees.

ABC COST ASSIGNMENT NETWORK



Work is performed by both clinical and nonclinical staff (the most expensive assets in health care by far), providing the means for converting the salaries and wages of these resources into the patient outcomes and overall patient experience. *Activity cost drivers* are the mechanisms for accomplishing each assignment from the work activity cost to a final cost object. Identifying and measuring activity cost drivers provides a means for assessing the extent to which staff time/energy/effort is being spent on mission-related activities.

An example of an activity cost driver for a warehouse is the number of stocked items picked. For a bank, it's the number of loans processed.

For a hospital, it may be the number and type of surgeries or laboratory tests performed. An advantage of ABC is that it also makes it possible to analyze unit-level cost consumption rates, which are useful for comparative-benchmarking studies and for projecting future expenses and costs, such as with rolling financial forecasts, what-if scenario analysis, and outsourcing decisions (e.g., Is it more economical to perform a lab test in-house or send to a reference lab?).

Final cost objects, at the bottom of the cost assignment network, represent the broad variety of outputs (e.g., treatments and services) where all the costs eventually accumulate. Patients are the "final-final" cost objects. As stated

previously, patients create the need (or at least the perceived need) for resource expenses. To ensure the optimum allocation of resources, finance leaders should have an open discussion with clinical leaders on which patient care costs are clinically necessary and which are more of a “nice-to-have” or perceived need. For example, there may be a perceived need for an expensive new implant, but clinical studies may show that it is not actually associated with improved outcomes. Healthcare providers are as susceptible to marketing hype as is any other type of buyer, and they therefore should make decisions based primarily on data-driven, unbiased research.

The key to a good ABC system is the design and architecture of its cost assignment network, which are only hinted at in the exhibit on page 6. The “nodes” in the network are the sources and destinations through which all the expenses are reassigned via calculated costs. The network with its nodes delivers the utility and value of the data for decision making. The point is, costing is accomplished with modeling and not with accounting general-ledger debits and credits and flawed cost allocation factors.

The exhibit at right displays the type of results that can be gleaned from ABC, belying any myth that the highest-volume patients in terms of services are proportionately profitable. In the exhibit, for example, some high-volume patients located below the break-even profit line are likely requiring unprofitable treatments and procedures.

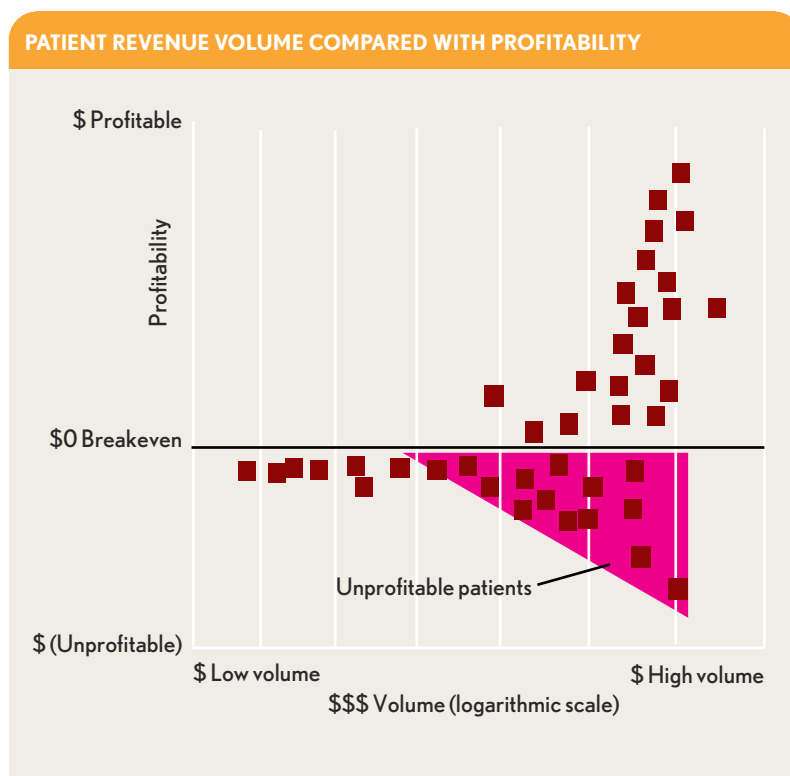
Migrating a Service Line to Higher Profitability

The crucial challenge is to go beyond using ABC’s math just for calculating valid patient profitability information from transactional data to applying its information wisely for better decisions and resource allocation to improve profitability.

Knowing that some patient types will cost more than others, it is paramount to be able to capitalize on those treatments and services that are profitable and present a potential for increased market share—especially when one considers that costs for less-profitable services can be reduced only so much before quality begins to suffer.

Reviewing the ABC cost assignment network on page 6, the bottom, final cost objects module displays two layers of a “nested” consumption sequence of costs. Note how the *final-final* cost object (patient-related costs) ultimately consumes all the other final cost-object costs that precede it (i.e., treatment- and procedure-related costs and supplier-related costs).

What remains is operating profit, or business-sustaining costs.



Medium-volume patients can be much more profitable than large-volume patients.

ABC PATIENT PROFIT & LOSS STATEMENT			
PATIENT: John Doe (# 12704563)			
Revenues	\$\$\$	Margin \$ (Net Revenue – Costs)	Margin % of Net Revenue
Service-related			
Supplier-related costs	\$ XXX	\$ XXX	88%
Direct material and supplies	XXX	XXX	50%
Treatments, procedures	XXX	XXX	30%
Distribution-related			
Delivery type	XXX	XXX	28%
Order type	XXX	XXX	26%
Patient-related			
Patient-sustaining	XXX	XXX	22%
Unique to patient	XXX	XXX	10%
Facility-sustaining	XXX	XXX	8%
Operating profit		XXX	8%

The left-to-right sequence of the activity cost drivers creates profit-margin layers like layers in an onion’s skin. As a result, there can now be a valid P&L statement for *each* patient as well as logical segments or groupings of patients. The exhibit above provides an example of an individual patient P&L statement.

With an ABC P&L, managers can examine the individual services and materials purchased from suppliers in greater detail. They can also analyze the mix of high- and low-profit-margin treatments “consumed” by the patients, based on their own unit costs and prices, as a composite average. Managers also can drill into details about the treatment and service-mix profit margins for more visibility and understanding. Moreover, within each type of treatment and service, the manager/business analyst can further examine the content and cost of the work activities and materials for each treatment and service. This patient P&L information quantifies the extent to

which patients differ in their profit levels beyond volume, as was shown in the exhibit on page 7.

In any health system’s P&L, profit margin is reflected in two major “layers”—i.e., the unique mix of treatment, procedures, and services offered, and the costs to serve patients apart from this mix of services, treatments, and procedures (i.e., the bottom half of the picture in the exhibit on page 6).

The exhibit on page 10 combines these two layers as a two-axis grid, where the vertical axis indicates profit margins of the treatments that patients “consumed” (reflecting net prices to the patients) and the horizontal axis indicates the additional costs to serve the patients. Individual patients (or clusters of patients with similar traits) are located at intersections, where the circle diameters reflect the patients’ revenues to the hospital. The exhibit shows, again, that not all volumes are good volumes. The objective is to

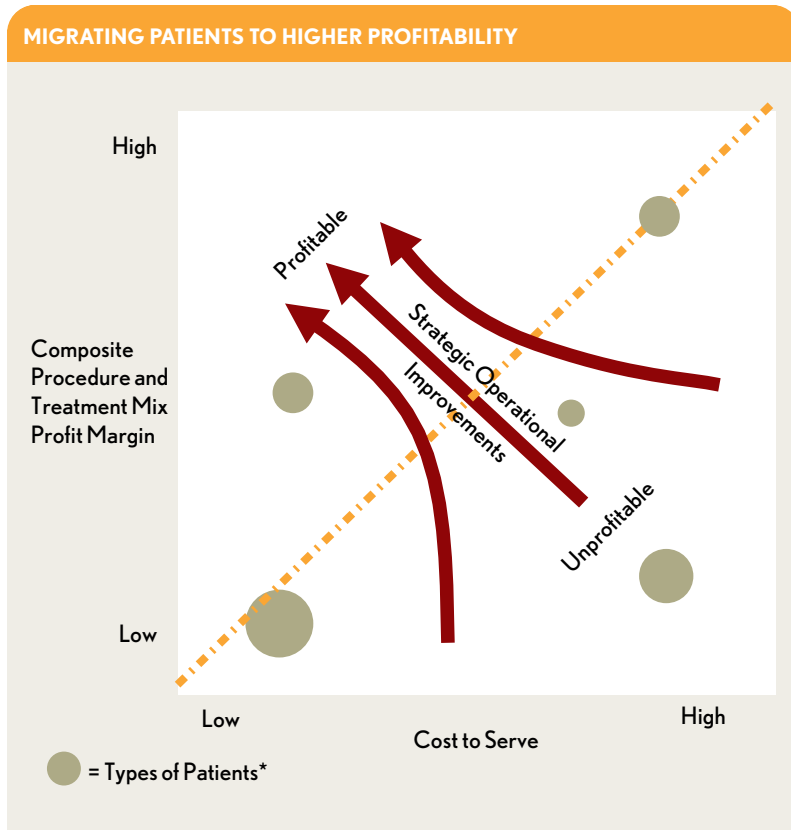
operate at a more efficient level for all patients regardless of their intersection location, and thereby generate more profits as more patients are managed to the upper-left corner of the grid. Examples of actions that will accomplish this purpose are listed in the exhibit below.

When analytics software is applied, hospitals can use profit-increasing techniques used in commercial companies, in which finance and marketing staff determine “next-best-offer

recommendations” based on a market basket analysis of their offerings to customers. The analysis uses rules of association, identifying items that frequently follow other items in transaction-based data. For example, patients with a specific DRG may typically receive services A and B with supplies Y and Z, but some physicians may order only service A and the less-expensive supply X for a set of patients. Observing this pattern, finance leaders can talk with clinical leaders to understand the variability in care. The

EXAMPLES OF TACTICS FOR ACHIEVING STRATEGIC OBJECTIVES OF AN INITIATIVE TO IMPROVE PATIENT PROFITABILITY

Strategic Objective	Tactic Example
Lower patient “costs to serve.”	Substitute nurse technicians in place of registered nurses where possible.
Understand and account for patient behavior that results in time or other resource waste.	Charging extra for missed appointments or excessive tardiness is an option. But more important is to follow up with patients to ensure new appointments are scheduled, because doing so leads to better patient outcomes and less resource waste in the overall patient care cycle.
Understand and account for physician behavior that results in wasted time or other resources.	Track costs of physician surgery schedule line-up changes.
Highlight premium elective service offerings in marketing efforts.	Offer gourmet meals or cosmetic surgery options.
Reduce cost of services minimally valued by patients; engage with clinicians about what truly is clinically necessary.	Defer the purchase of a new magnetic resonance imaging (MRI) machine until absolutely necessary. (Do patients truly care when an MRI machine is brand-new?)
Analyze opportunity costs; consider new service offerings.	Analyze the cost of implementing resources to support a new type of surgery.
Renegotiate with health plans and suppliers once patient-level costs are fully understood.	Use detailed service line costing data in negotiations to keep vendors in alignment with payment rates and health plans in alignment with actual costs. Include the expertise of clinicians in this process.
Focus on cost containment for unprofitable products, services, or patients.	Having first obtained a deep understanding of all underlying costs for unprofitable products, services, or patients, begin a conversation among financial, operational, and clinical leaders regarding possible short- and long-term solutions.
Improve health system processes to promote higher productivity (i.e., do more with less).	Analyze current processes and procedures to ascertain which provide no additional value to the patient experience or to revenue cycle improvement, and eliminate or transform these superfluous processes and procedures.
Improve payment management.	Require up-front payments from patients as much as possible; offer discounts for prompt payment.
Improve clinical documentation.	It is often said, “If it isn’t documented, it didn’t happen.” This statement is of course not true. Costs were certainly incurred to serve the patient, but they will not be properly covered if they are undocumented or under-documented.
Increase specialization in activities that have been shown to improve patient outcomes and increase profits.	Educate staff and patients on critical measures for preventing readmissions and hospital-acquired conditions, including hand-washing, equipment sterilization, discharging patients with required 30-day medications and instructions, and patient education and post-discharge follow-up.



*The size of the circle reflects the comparative amount of revenue associated with the patient or patient type.

point isn't to suggest to physicians the best clinical path, but to discuss when the extra cost is justified. The very reason for the emergence of value-based initiatives was to generate such important conversations and to create higher levels of incentives *and* accountability.

Note that migrating patients to the grid's upper-left corner is equivalent to moving individual data points upward in the exhibit on page 7. Knowing where each patient is located on the profit matrix is particularly important because it enables the organization to protect its most profitable patients from competitors. And having that knowledge requires ABC information.

Expand the Function

Much has been written about the increasing role of healthcare CFOs as strategic advisers for their organizations. Now is the time for the senior finance leader's accounting and finance function to expand beyond his or her external financial accounting, reporting, and governance responsibilities to providing decision support information with progressive management accounting practices like ABC. There always should be a balance between managing patient care at a level to earn patient loyalty while also controlling the costs of that care to ensure the long-term sustainability of the healthcare organization and its ability to serve patients.

Ultimately, the goal for all health system stakeholders (patients, community, employees, vendors, suppliers, and partners) is to deliver high-quality care for a patient population while maintaining the organization's financial well-being. Think of each patient as an investment, for which every action taken is aimed at realizing a positive return, whether that refers to health and well-being, high levels of satisfaction, or profitability to the organization. ■

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