As hospitals and health systems prepare for the value-based business model, it is essential that they develop a clear understanding of service line performance. These organizations’ leaders require service line analytics and modeling capabilities that provide accuracy, flexibility, and the ability to drill into details to obtain the most reliable possible picture of all elements of revenues and costs. Using IT systems that provide clear visibility into a variety of key financial and performance analytics across clinical service lines, organizations can identify trends and areas in need of improvement. This information can provide vital support for the organization’s long-range and tactical-planning activities.

Historically, most cost-accounting models have provided either too little or too much detail to meet these needs. The sheer complexity of the healthcare business compounds the problem. Most hospitals and health systems offer a broad range of services that are paid for at varying levels by multiple payers with numerous health plans and payment models. For example, payment for hip replacement surgery can vary significantly depending on whether a patient has Medicare, Medicaid, high-deductible commercial, or some other type of insurance coverage. The organization’s cost-accounting model should allow its finance professionals to track such differences and efficiently organize and distill disparate service line data into actionable information.

A valid service line structure and approach are essential to understanding performance drivers and responding appropriately to operational and financial outcomes. For detailed insight into net revenue and cost-of-care trends, healthcare leaders require revenue and costing models that have the flexibility and level of granularity sufficient to support meaningful projections of volumes, net revenues, and cost behavior. Only with such capabilities can they make well-informed strategic decisions regarding, for example, which service lines to expand and which to scale down or close.

**Delivering Effective Service Line Analytics**

Within revenue modeling and cost-accounting systems, hospital and health system leaders should develop a framework that allows for routine and reliable collection,
analysis, and dissemination of service line data. Focusing on the following key areas can help in establishing effective systems for service line analytics.

**Updated service line definitions.** The first step involves organizing service line and patient data into the most appropriate and most relevant data pools or categories. A number of criteria may be used in determining these classifications, including patients’ gender, age, diagnoses, severity, procedures, and other factors. Although it may add to the initial administrative work, combining inpatients and outpatients in the same service line categories is critical for providing the most complete picture of operational performance and service line costs.

This step poses the challenge of reconciling codes for the many organizations using a broad range of ICD diagnoses and CPT codes for outpatients, rather than the MS-DRGs more commonly used for inpatients. Outpatients often are categorized according to the services received, such as ambulatory surgery or radiology. Inpatients, on the other hand, typically are categorized by primary diagnosis or episode of care, such as acute myocardial infarction, chronic obstructive pulmonary disease, or cesarean section.

Definitions should start at a subservice level and then be grouped into broader service lines. Because integrated delivery systems tend to offer a breadth of health services, service lines often must be grouped into higher service line categories for general reporting purposes. This hierarchy or service schema allows data to be aggregated, while still allowing the analysis to drill through to greater service detail. To reflect the data in a flexible manner, more than one hierarchy or schema often is needed, and systems need to support multiple views of service lines.

For example, definitions might be established using categories that reflect the clinical services utilized or treatments provided for a particular type of patient stay (e.g., cardiology or orthopedics). Analysis of the volume, cost, and margin trends can influence strategic-planning activities and help the organization negotiate favorable contract terms with payers. An additional view of these patients might be developed around demographics such as age and/or gender, and further segmented by clinical diagnoses, provider, or service site. The evaluation of patient populations by different criteria can reveal volume and utilization trends and, in turn, influence where proactive interventions for care programs might be introduced into communities served.

The significant amount of work required to integrate outpatient and inpatient data in service line definitions is well worth the effort when it comes to maximizing the usefulness of the data. Especially from the perspective of managing episodes of care, clinicians and service line leaders benefit from having details on both inpatient and outpatient activity to fully understand the entire range of services required to treat a particular disease or condition. Aggregating both patient types also allows organizations to identify any overlaps, unnecessary duplication, or significant variances in the care delivered, and to better evaluate the total cost of care for a particular patient care episode.

**Ability to analyze and trend service line net patient revenues by payment source.** Gaining visibility into service line revenue sources is an important step in managing the narrow margins prevalent within healthcare organizations. Improving margins in many cases should start with a focus on volumes and net patient revenues. Tools supporting service line revenue analysis should include the ability to:

- Evaluate and trend financial or payer mix changes
- Drill from financial class to payers and on down to details on individual insurance plans
- Determine revenue cycle indicators such as denials and write-offs
- Evaluate contract performance
- Model alternative revenue sources (e.g., bundled payment arrangements)

By performing detailed analysis of net patient revenues by service line, finance managers can define action plans to improve both top-line and overall financial performance. This type of analysis also allows service line managers to evaluate the impact of alternative opportunities, understand the financial ramifications of new contract terms, and assess new payment methods that may be more favorable.
Access to accurate service line cost information across multiple dimensions, with drill-through capabilities. Having valid and reliable cost information should be a top priority for healthcare organizations today. Cost information is needed in service line analytics to identify cost-saving opportunities and to correlate costs with outcomes.

Cost-accounting systems should enable viewing of costs at the appropriate level of detail. Cost models should support both key activities at the patient level and costs specific to individual service lines (e.g., organ acquisition costs for transplant programs). This patient- or encounter-level costing approach also can be used to allocate service line marketing costs, which traditionally have been considered an indirect overhead cost.

A cost-accounting system should allow for assessment of cost at the physician or specialty level. Medical practice costs can vary greatly, and the ability to accurately capture these variances should be reflected in the resulting service line cost analytics.

The system also should enable viewing of data across multiple dimensions. These dimensions include not only the service line costs by financial class, payer, and insurance plan that must be viewed to evaluate margins (as previously mentioned), but also data with respect to other key dimensions, such as the following (with examples of how the data might be used in service line analytics):

- Entity or location—for internal benchmarking or identifying the optimal service location
- Physician—for ranking of physicians according to costs and other key outcomes
- Geography (e.g., city/town or zip code)—for gaining insight into service line market share and patient distribution dynamics
- Patient demographics (e.g., age, gender, race, and ethnicity)—for obtaining critical information about potential growth opportunities or network shortcomings that should be addressed

Ability to redesign key reports based on changing requirements. Having revenue modeling and cost-accounting models that group all relevant activity in the most appropriate service lines can help an organization understand the strategic impact of certain services. For example, the leader of the cardiac service line may be able to demonstrate that the service line is drawing a large portion of first-time patients to a health system, prompting the organization to track those patients’ subsequent use of noncardiac services. As the data are collected, they should be routinely and accurately disseminated in an easily understandable format that supports effective performance tracking to foster operational and clinical improvements.

Healthcare leaders should ensure that key reports periodically distributed to service line leaders and other stakeholders highlight trends in volume, revenue, and cost measures over time. These reports should not be snapshots focused on a single, limited time period, but should provide year-over-year comparisons with meaningful per case and per visit measures.

In addition to providing insights into internal shifts in these measures, key reports that contain information on trends allow management to better understand the local impact of external changes in the broader market or industry. For example, leaders can get a sense for how decreasing demand for inpatient care and increasing demand for certain ambulatory care services affect their organization with respect to particular surgeries or procedures.

Having the tools in place to record and track these types of service line trends in key reports allows organizations to anticipate potentially significant changes that may affect numerous areas of the organization’s business. Leaders then can respond with appropriate planning and actions in areas such as optimal staffing patterns, capacity, and facility planning.

Clear assignment of accountability. Once service line data have been collected, aggregated, analyzed, and reported, healthcare leaders should ensure that the data will be used effectively to drive improvements throughout the organization by establishing a system of accountability for service line performance. Responsibility for performance across a service line or service lines should be assigned to a specific individual or individuals, rather than being more narrowly assumed by each division or department.
The service line leader thus assumes responsibility for instituting and overseeing improvement initiatives. Historically, management responsibilities typically have been aligned around directing functional improvements, but the growing emphasis on enhancing the value of care is prompting more organizations also to assign managers responsibility for service line profits and losses. Armed with reliable analytics, the service line leaders can feel empowered to work with physicians, nurses, and other clinicians who are most involved in treating a particular patient group to make needed enhancements.

Beyond Traditional Profitability Measurement
In addition to providing a framework for the effective collection and use of service line analytics, hospital and health system leaders should reevaluate the types of measures included in those analytics. Service line analyses can help to isolate the variables and causes of changes in margin, including payer mix shifts, increased supply costs, and changes in net revenue per case. The U.S. healthcare system’s transition to a value-based model, however, also requires that organizations further integrate clinical and quality-of-care measures into service line volume and profitability reporting.

Examples include tracking how often patients who have undergone coronary bypass surgery must return for additional surgeries or procedures, and how often patients with complications from Type 2 diabetes are readmitted to the hospital. Hospitals and health systems are under increasing pressure to track such measures because of heightened awareness industrywide of how these measures affect the cost and quality of care, and to minimize or eliminate penalties for avoidable readmissions under the Medicare program.

Including such measures in service line analytics and reporting provides a means for healthcare leaders to evaluate quality over time and identify areas for improvement.

Service Line Analytics: A Critical Success Factor
Healthcare organizations require revenue management and cost-accounting systems with robust modeling and reporting capabilities to meet the demands of the changing healthcare system. Such capabilities provide finance and health management professionals with the ability to model the impact of changes to service line activity across revenue and expense plans.

Common questions that service line analytics can help to answer include the following:
> Which services and patients have the greatest impact on revenue?
> How are shifts in volume and service mix affecting the organization’s bottom line over time?
> Are there opportunities to influence physician/clinician behavior to reduce care costs?
> Are there more optimal approaches to service delivery that would reduce duplication and improve value?
> How can the organization model or forecast how shifts in volume or service line mix affect revenue and workload?

The ability of healthcare leaders to make sound strategic decisions for their organizations depends in large part on the extent to which they have ready access to complete and accurate net revenue and costing data. The ability to use reliable service line analytics also affords midlevel managers the data and tools they require to monitor and enhance performance in both cost and quality on a daily basis. Therefore, by ensuring that both leaders and midlevel managers possess these important capabilities, a healthcare organization can establish a solid foundation for ongoing success under the value-based business model.

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