Business Strategy: Getting to Goal — The Role of Cost Accounting in U.S. Health Systems’ Transformation

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IDC HEALTH INSIGHTS OPINION

This IDC Health Insights report discusses the growing importance of cost accounting in U.S. health systems’ analytics and IT strategy and important considerations hospitals should make when adopting cost accounting tools. Cost accounting is playing an increasingly important role in U.S. health systems and hospitals, as they make the transformation to value-based care. Cost is one of the key goals for health systems making this transition; the oft-cited triple aim is, after all, to increase access and value while reducing cost. But most cost accounting approaches in healthcare have been minimally effective, and the new emphasis on value-based care in the industry has called them into question, as health systems begin to demand rigorous and accurate approaches to understanding their costs that they can apply to pricing, contracting, operational decision making, measuring outcomes, planning strategy, interacting with payers, and even the value of the care itself when cost is linked to outcome. Providers making cost accounting investments should consider:

- **Cost accounting is a type of analytics.** Most U.S. provider organizations have been investing heavily in analytics over the past few years, and cost accounting is another type of analytics that will be essential to their operations. But like other types of analytics, it is important for IT to differentiate between platforms and tools when guiding investment; providers making cost accounting investments should seek to build on existing analytics platforms where possible, to provide the tools needed for cost accounting.

- **Top-down models and bottom-up costing approaches.** Two main approaches to cost accounting can be described as top-down and bottom-up approaches. Top-down models essentially take the operating expenses of the hospital and seek to attribute them to service lines, departments, and eventually individual events; these are prone to error introduced by their assumptions along the way. Bottom-up models get into the minutiae and seek to determine cost by considering each and every expense involved in an activity and can get bogged down in the details, making cost accounting highly complex, incredibly costly and, in the end, still inaccurate, as many expenses in a hospital are tough to determine and attribute. Newer solutions emerging and gaining traction in the industry have elements of both in their approaches; hospitals should consider the data they have available when choosing a specific approach.

- **Centralized and distributed approaches.** Classic hospital cost accounting systems are based on RVU models assembled from the top down. Models aren't necessarily a bad approach, but it should be considered that centralized finance departments don't always understand costs at the department or procedure level. Successful cost accounting approaches will involve both centralized information stewardship and distributed input into models and their application.
IN THIS STUDY

This IDC Health Insights report is based on primary and secondary research with cost accounting suppliers, including established players and new entrants, and cost accounting end users in the industry. The primary and secondary research for this report was conducted from May to September 2014 and includes observations of both implementations in progress and established technology in the industry.

SITUATION OVERVIEW

The importance of cost accounting had been growing over the years but came into focus following the introduction of the Patient Protection and Affordable Care Act (PPACA) in 2010. PPACA offered a number of mechanisms and approaches as well as programs for achieving its aim, to improve the quality of care and outcomes for patients, while increasing access and decreasing the cost of care. The end goal was to improve value for payers and patients by improving results while lowering costs. Initial efforts surrounding PPACA focused on population health management to facilitate the goal of improving outcomes and quality, but it quickly became apparent to providers that they also needed information from analytics to facilitate population health management and to more accurately understand their costs to reduce variation in costs and improve value across the board. Cost containment cannot be accomplished without an accurate and detailed understanding of cost, and the factors that influence it, to understand opportunities for cost containment, an essential component of success in accountable care. These market drivers create a need for better and more robust cost accounting systems in provider organizations.

Cost accounting is not new to healthcare, but the complexity of the modern health system — with its many inpatient and ambulatory departments, staff and consulting physicians, multiple entry points, payer relationships, and service lines — has long eluded efforts to better understand the cost of care. Most cost accounting approaches thus far in healthcare have been of two basic types: high-level cost models based on the relative-value unit (RVU), established by Medicare as part of its resource-based relative value scale (RBRVS) for determining payment, and more complicated approaches that attempt to understand cost based on often incomplete, inconsistently collected, and complex direct costing data from within hospitals. Both are largely understood to be flawed approaches when used in isolation. Cost accounting is increasingly critical to making good business decisions and remaining competitive under accountable care. Many efforts have been made, and key strategies for accomplishing cost accounting include leveraging Medicare's implementation of the RBRVS and its RVUs, one of the first widespread approaches to cost accounting, as well as more recent efforts to conduct activity-based costing, in combined models.

Medicare, RVUs, and RCCs

Medicare’s RBRVS and its units of value, RVUs, were introduced into healthcare in the United States with the Omnibus Budget Reconciliation Act of 1989. The RBRVS was one of the first attempts by the government to instill an element of cost and subsequently equitable cost containment into Medicare reimbursement policies; prior to the implementation of the RBRVS, most payments were made on the basis of the usual, customary, and reasonable (UCR) billing amount for a service in an area. The
RBRVS and its RVU calculation includes components for physician work, practice (overhead), and malpractice (insurance) expense, with an adjustment for geographical variation in payment. RVUs tend to be seen as weighing complexity too highly and thereby biased toward specialist providers and in-person visits, and the methodology used to set the rates has been questioned, among other issues with the RBRVS. Further problems arise when Medicare payment calculations like RVUs or derivations of them are extended to commercial settings.

However, the RVU represents a strong basis for many forms of cost accounting and, outside of its use in determining payment, is used extensively to evaluate potential fee schedules, analyze contracts, and determine physician compensation in healthcare organizations. Using RVUs in cost accounting is a top-down methodology – mostly derived from the assumption that, if a healthcare organization knows its total operating cost and has data on volume that allows it to determine the total RVUs its provider delivered, the cost per RVU can be calculated and basic cost accounting can be performed. The RVU model can be extended if data about costs can be allocated to individual departments and service line. In a less complex business model like a single-specialty ambulatory practice involved in fee-for-service arrangement, RVU-based cost accounting can be sufficient. However, changes in the healthcare system as value-based care evolves have made the methodology problematic for most providers; the underlying issues with the determination of RVUs as well as assumptions as to resource nature, intensity, and distribution are all reflected in the accuracy of cost accounting solely using RVUs.

The Ratio of Cost to Charges (RCC) is another method for approaching cost accounting, with or without the use of RVUs. RCC can be calculated quite easily as a simple ratio of cost/charge but does not have the advantage of taking the complexity and resource consumption into account that the RVU does. The two are often used together, with the RCC taking the place of the RVU in areas for which RVUs are not available. However, even when used together in a hybrid model, both RVUs and RCCs have disadvantages, especially when working with large, complex, multilocation, and multiple service line health systems. While the RVU’s issues are mainly around calculation and determination, allocation of costs are an issue with both RVUs and RCCs. RCCs are further disadvantaged by the assumption that cost will be proportional to charge; as most organizations that go further along into activity-based costing will find, this is not always the case. For this reason, most cost accounting environments seek to evolve past PCCs and RVUs to include activity-based costing, either in combination with RVU- or RCC-based models or on its own.

**THE APPROACH**

**Activity-Based Costing**

Activity-based costing was developed in the manufacturing industry to allow companies to focus on profitability by identifying and eliminating unnecessary costs. Activity-based costing techniques identify the relationships between activities and the resources needed to delivery them – in healthcare, this would be healthcare services. Activity-based costing needs to take into account the contribution of all the resources consumed in the delivery of care in order to be most effective. But healthcare is not as clear-cut as manufacturing. Ideally, activity-based costing should attribute supply, labor, resources, and overhead, as well as all the discrete costs that go into each interaction supplied by individuals and departments in the hospital. However, the complexity of healthcare costs creates many issues for
health systems that wish to implement comprehensive activity-based costing systems, particularly in these three critical areas:

- **Labor.** A health system's largest cost, labor, is the first thing we need to address when entering the activity-based costing realm. Healthcare workers work in shifts to provide 24 x 7 care in the hospital and are often assigned to floors or groups of patients who may be hospitalized for a variety reasons like observation to monitor a condition, a planned procedure and its pre- and postcare, or an acute emergency. Multiple reasons for admission create multiple levels of acuity within the responsibility of a staff member. This means that even though a nurse may be assigned to six patients on a medical unit, she may spend 50% of her time with one patient and only 10% with the other five, if one requires more attention than others, and ideally this should be reflected in the cost attributed to caring for a specific patient. Cost allocation approaches seek to address this unevenness in resource consumption by patients. Many different approaches are used in cost accounting attempts to answer this question by leveraging data from sources like RFID badges, security and authentication systems, acuity scoring, and other methods of allocation. Some labor expense, like that of physicians and other skilled professionals, can be accounted for by tracking orders and procedures completed; however, many health systems will want to get more specific by tracking time spent on completing orders and procedures, to compare productivity of providers and optimize capacity planning and scheduling.

- **Supply.** Supply is the second-largest cost for most health systems. In a manufacturing environment, cost accounting systems will attempt to attribute the cost of every component, no matter how small, to a product. In a health system, this approach translates to attributing the cost of supplies to individual patients, physicians, and procedures, but doing this for all supplies can be unnecessary as some are used more uniformly than others are. Large, expensive consumable items, like implantable devices, need to be tracked very carefully. Use of reusable medical devices like infusion pumps and bedside monitors should also be tracked and attributed to the costs of services. RFID and barcoding can be used for tracking and incorporating these items into cost records. When we get into smaller items, like gloves and bandages, hospitals need to determine the value of actual costing when compared with modeled approaches to cost accounting and containment.

- **Overhead.** Overhead can be quite difficult for health systems to ascertain and attribute to individual procedures and services. Overhead costs that need to be attributed include the physical plant and utilities and the overhead costs associated with maintenance and availability of the emergency room, operating rooms, procedure rooms, laboratory, pharmacy, and other specialized spaces that serve the population. Costs that need to be attributed include both supplies that are actually used and those that cannot be used, like expired drugs and injectables but must remain on hand. Service-based overhead costs include cleaning, dietary, and therapeutic services, among others. IT costs also need to be attributed. Overhead is complicated further for acute care centers that not only need to offer capacity to meet day-to-day requirements in a community but also must remain prepared to expand capacity quickly in the event of a public health emergency. RVU-based systems make attempts to attribute overhead, and continued use of components of this model and similar ones are not unreasonable for calculations of overhead, even if activity-based models are used for costs like labor and supply in a hybrid model. The lack of alignment between the actual cost of delivering a single healthcare service and the fee schedules of hospitals have come under attention lately, with public criticism of fee schedules that seem arbitrary or excessive. Some of this complaint is related to the lack of availability of accurate cost data, while some component
of it is certainly due to the significant overhead associated with the full spectrum of services a hospital delivers to the community.

Activity-based costing information can then be combined with historical and actuarial data to calculate expected procedure volumes and forecast cost. Activity-based costing provides an important component for provider organizations that want deeper insight into their costs, to identify opportunities to address waste and lower costs, and compete under their growing share of accountable delivery contracts. Activity-based costing is perhaps most effective when used in hybrid models, with rigorous costing methodology applied to high-value data and cost components, while relatively low-value data and areas where RVUs and RCCs apply well can continue to be modeled using tools like RVUs and RCCs. In the remainder of this report, hybrid costing models refer to those techniques that include elements of RVU- and/or RCC-based models alongside activity-based costing applied selectively to different areas of the business.

Vendors to Watch

With the evolution of the need for more rigorous cost accounting, many suppliers are adding new cost analytics capabilities to enterprise data warehouse environments and introducing new cost analytics tools. The methodologies and data requirements for these tools vary; some are firmly rooted in historical healthcare approaches like the use of RVUs and RCCs, and others come straight out of pure activity-based costing environments. Health systems selecting costing solutions should consider the fit of the methodology of a tool to the data they have accessible and their goals. Vendors with existing and new functionality under development include, but are not limited to:

- **Allscripts.** With approximately 300 customers representing over 900 hospitals, Allscripts EPSi is one of the most established and widely used financial planning and cost accounting applications in U.S. health systems. EPSi was founded as an independent company in 1999 and acquired by Eclipsys in 2008, which then was acquired by Allscripts in 2010. Allscripts has continued to support and enhance the product for use both in integration with its HIS and EHR systems and for standalone use by clients of other HIS and EHR systems. EPSi is a Web-based performance analytics and operational optimization solution that aggregates data from multiple sources. The solution includes business intelligence, planning and decision support functionality that incorporates analytics, product line forecasting, strategic planning, cost accounting, reimbursement modeling, operational and capital budgeting, and productivity analysis. While EPSi has been in use for over 15 years, recent years have seen the focus of users shift from its planning and budgeting capabilities to its long underutilized cost accounting capabilities. Allscripts has responded to customer demand for extended support of core functionality and cost accounting functionality by extending its patient data model to allow for more hybrid and detailed attribution capabilities, much of which will be delivered in its 8.0 release, anticipated in November 2014.

- **Explorys.** Explorys is a healthcare data warehouse supplier founded in 2009 as an innovation spinoff from the Cleveland Clinic and currently used by 19 integrated delivery networks at 300 hospital sites. Explorys offers a cloud-based data warehouse solution that offers high performance via the incorporation of big data infrastructure into its platform, with an emphasis on data security and integrity. Explorys' analytics tools have a strong focus on the cost, risk management, and performance associated with clinical encounters, with clinical cost a component of its existing analytics and decision support tools. Explorys plans to expand cost accounting capabilities with product releases for its customers in 2015.
**Health Catalyst.** Health Catalyst was founded in 2008 and is headquartered in Salt Lake City, Utah. Catalyst has 19 health system clients serving over 150 hospitals and an aggressive innovation strategy including close collaboration with clients in developing both the enterprise data warehouse platform and advanced application tools. Catalyst offers a unique late-binding approach to the EDW that leads to rapid implementation for its structured, actionable analytics. Catalyst's core functionality includes an environmental scan capability that the company refers to as its initial key process evaluation as well as extensive models for evaluating clinical costs, variation, and waste. The company has activity-based costing functionality in development with a pilot customer and expects a general release of the functionality in 2014.

**Oracle.** Oracle offers cost accounting capabilities to healthcare providers via its Enterprise Healthcare Analytics (EHA) data warehouse platform and Hyperion business intelligence suite. Oracle's Hyperion cost accounting solution is currently available, but Oracle is working in collaboration with key health system clients to deliver healthcare-specific models and best practice-based approaches for cost accounting to its healthcare clients. Oracle EHA and Hyperion tools are most commonly installed on-premise but can be delivered via the cloud. With its origin in other industries and strength in manufacturing, Oracle offers an activity-based costing capability that uses a distributed model to attribute costs with contributions to the models from individual departments in the health system. Oracle's installed base with human capital management and enterprise resource planning systems in hospitals gives the horizontal vendor a strong position with which to enter provider cost accounting, given the importance of labor and supply to cost models.

**Strata Decision Technology.** Strata Decision Technology was founded in 1996 and offers financial analytics and performance management systems to 175 health systems representing approximately 1,000 U.S. hospitals. Strata's product suite, StrataJazz, is an entirely cloud-based SaaS platform with modular capabilities for financial planning, decision support, and cost management. Strata is not typically used as a data warehouse, but it integrates with ERP, EDW, and EHR solutions, and the company has relationships with multiple data warehouse providers and HIS/EHR systems including Epic. As demand has increased for cost accounting, Strata's product road map has evolved accordingly, and the current offering includes cost accounting via a hybrid model in its decision support module as well as additional capabilities for rolling forecasting, strategic planning, budgeting, capital planning, reporting, and performance management. A planned major release in October of a new Continuous Cost Improvement (CCI) module will make additional algorithms and workflow for cost management available.

**Other vendors.** The cost analytics space is growing quickly, driven by need from providers that wish to add capabilities to their environments and the wide array of capabilities under demand. Additional suppliers with cost accounting capabilities currently available and/or under development include Infor, McKesson, and Cerner. Established vendors are constantly making new capabilities available to customers, and new suppliers are emerging, particularly in the cloud-based analytics-as-a-service space, to serve the growing need for cost accounting applications.

**FUTURE OUTLOOK**

Going forward, health systems will be increasingly focused on value and providing the outcomes patients and payers want at the lowest cost. The shift away from fee-for-service medicine will lead to value or outcomes-based payments, and in this environment, cost is a critical component of health...
system profitability. Depending on the extent to which hospitals adopt value-based contracts, most will seek to reduce cost by 10-25% per year in the upcoming years as value-based care takes hold. To achieve these results, rigorous approaches to cost accounting will be required.

For most health systems, this will mean investing in new or enhanced cost accounting capabilities. IDC Health Insights estimates have placed analytics spending growth in U.S. hospitals in the 11-14% CAGR range for several years since the introduction of PPACA, and growth is expected to continue. Cost accounting analytics will grow in their share of the analytics spending in 2014 and subsequent years.

ESSENTIAL GUIDANCE

Actions to Consider

Cost accounting represents a complex undertaking for provider organizations. To get started, IDC Health Insights recommends the following steps:

- **Do an environmental scan.** When planning cost accounting projects and investments, look closely at the organization to understand which areas have largely unexamined costs and which high-cost areas may present the most opportunity. Be open minded, as some cost containment opportunities may be surprising, some surprisingly simple, and some surprisingly large. An environmental scan should be comprehensive and evaluate both the opportunity itself and the time and effort required to get results when planning and prioritizing cost accounting targets. Most suppliers offer services to assist organizations in conducting this scan.

- **Determine goals up front.** While the goal of cost accounting may seem to be to assign every cost to an activity in its exact amount, hospitals will be able to make significant strides toward cost accounting and cost containment goals by looking at their most important costs in a detailed analysis, while continuing to use modeling for costs that are more uniform or clearly present less opportunity for cost containment. Use existing models for costs that are uniform and well suited to these models, but look for a more rigorous activity-based approach in areas that are identified as high opportunity. Know overall cost goals, and keep these goals in mind when identifying and prioritizing cost accounting and containment initiatives.

- **Determine realistic timelines.** Consider goals and obstacles when constructing timelines, both in the IT area and with the people and process issues associated with cost containment. Understand what resources are available and what will be required as well as the existing data and its quality and set realistic timelines that will allow the organization to construct its cost accounting environment in a way that will allow it to achieve its goals. Trying to do too much too quickly or overlooking data quality and modeling issues lead to failed projects.

- **Consider an IT road map.** Hospitals considering investing in cost accounting should look for solutions that fit with existing IT and analytics road maps in the organization. Those with established analytics programs and enterprise data warehouses in place should look for tools that work with existing warehouses, whether from existing warehouse and tool suppliers and partners or from newer standalone cost accounting suppliers that can work with their existing warehouses. Some new data integration may be required to augment the enterprise warehouse with cost accounting tools, but it is less likely than establishing a new data
warehousing program. Those organizations without enterprise warehousing programs, or those with warehouses that are not suitable to building out a costing environment, should seek products that can leverage operational data stores to bring cost accounting solutions into operation more quickly.

- **Find trusted suppliers that align with your organization.** Every health system (even individual hospitals within the same health system) has a slightly different landscape of silos in its IT portfolio. Cost accounting represents a complex undertaking that will require health systems to identify and prioritize available data, hard to get data, and hard to integrate data and do the best job possible to incorporate this data into the costing environment. Select a trusted cost accounting suppliers’ approach that aligns with your data landscape and goals for the programs.

- **Look at big data and cloud.** Those health systems making new investments in data warehouse technology to support cost accounting should consider newer high-performance analytics that may offer better performance and faster time to market. Cloud-based tools can be quite effective when sourced from suppliers with a good understanding of offering cloud services in healthcare with appropriate security provisions to protect data. Cloud-based systems also may allow closer collaboration with suppliers well versed in cost accounting techniques that may be new to the organization.

- **Assess organizational readiness.** Cost accounting and containment efforts require change. This will include additional documentation and reporting responsibilities to capture cost data and process change for clinical, financial, procurement, and other staff to achieve the actual cost savings. Staff buy-in is also essential because of the massive process change addressing cost issues involves. Readiness should be assessed when planning projects and staff must be prepared for this change with training, augmentation, support, and resource redistribution where needed to accomplish the additional reporting and process change goals.

- **Get staff buy-in.** Most health systems that have completed cost accounting projects and achieved ROI stress the importance of managing organizational change well, getting buy-in from the clinical stakeholders who will need to use cost accounting data to achieve goals, and the potential pitfalls of not managing change properly, particularly with clinical staff. Business analysts or clinical liaisons who can help bridge the gap between finance, IT, and clinical departments that will use the cost data are important contributors to most successful efforts. Organizations should also consider readiness and staff buy-in when choosing which areas of the business to attack first with costing efforts; those areas that are ready and engaged may be more successful even if they are not the ones with the most massive opportunity. Large opportunities should be prioritized in costing activities, but initial efforts should look at large opportunities that also provide ready and willing participants to learn processes and develop capabilities.

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Best Practices: CDI Technology Improves Physician Documentation, Coding Accuracy, and Revenue Cycle Operations at UPMC (IDC Health Insights #HI247818, May 2014)

Business Strategy: IDC MaturityScape – Cloud in Healthcare Provider (IDC Health Insights #HI247819, May 2014)

Synopsis

This IDC Health Insights report discusses the growing importance of cost accounting in U.S. health systems’ analytics and IT strategy and important considerations hospitals should make when selecting and implementing cost accounting tools. Cost accounting is playing an increasingly important role in U.S. health systems and hospitals as they make the transformation to value-based care.

According to research director Judy Hanover, IDC Health Insights, "Cost accounting represents a true challenge to providers. To be successful at cost accounting, cost containment, and accountable care, U.S. hospitals must not only undertake complex analytics but also come to terms with failures in their processes and delivery of care." This report discusses methodologies and approaches to planning a strategy for implementing cost containment technology in U.S. provider organizations.
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