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Surviving Value-Based Purchasing in Healthcare:
Connecting Your Clinical and Financial Data for the Best ROI

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AT FIRST GLANCE, creating a healthcare system that focuses on lowering costs seems counterintuitive in an environment that rewards quality improvements. But that's the challenge today's healthcare finance executives are faced with: lowering costs while improving quality and combining the two to ensure a thriving bottom line.

It's an winnable challenge, provided the healthcare system approaches the task with a thorough understanding of where it stands relative to clinical quality measures and the costs associated with delivering care.

For finance executives, the need to account for clinical quality to predict the financial health of the organization is a significant paradigm shift. In the traditional fee-for-service reimbursement environment, measuring volume was front and center for the finance team—and it's still a key part of the equation today. Generally, healthcare has adapted to per-case payment methodology. But with payments also hinging upon quality, focusing solely on old metrics won't bring financial success, particularly not in a world of accountable care, quality measures, shared savings, and bundled payments. Today's focus must shift to lowering the costs associated with obtaining higher quality.

> "Understanding how clinical quality and other factors affect the bottom line requires financial executives to master the new lexicon of value-based purchasing, which pays and rewards based on the quality of the outcome and the patient's satisfaction."

HOW FINANCES ARE AFFECTED BY CLINICAL PROCESSES

With the shift to value-based purchasing, the U.S. healthcare system faces its most significant transformation since the advent of managed care in the 1980s. Health system financial executives are in the thick of navigating the complexities of this change, tasked with helping their organizations determine exactly how to strategically approach the new reimbursement environment.

Questions financial executives must address include:

- Do we want to create or participate in an accountable care organization (ACO)?

- Are we prepared to manage partnerships? How will we collaborate with payers?

- What level of risk should we assume?

- What is the ideal financial arrangement for shared savings?

Additional considerations include the regulations and quality metrics affecting a hospital's reimbursement—how many people go the ER, how are patients rating their satisfaction, how is one hospital performing against others? While each individual quality measure is a small thing to track, the combination of quality measure coupled with an influx of new regulations heavily impacts the bottom line. Add to this the fact that quality measures can and likely will change over time and that each payer has the right to associate different penalties and incentives with them, and tracking develops into a very complicated proposition.

Quality measurement is just one of the complexities that value-based purchasing introduces into the process of managing an organization's costs. Understanding how clinical quality and other factors affect the bottom line requires financial executives to master the new lexicon of value-based purchasing, which pays and rewards based on the quality of the outcome and the patient's satisfaction. Volume metrics alone can't provide the insight needed for an organization to succeed under health reform.

Financial Metrics for Value-based Purchasing
Within value-based purchasing are key metrics (Figure 1) that go beyond volume that finance executives need to track to obtain a full picture of a health system's cost and to make sound decisions, including the following:

- **Throughput.** The time it takes to complete a process now translates directly into money and greatly affects quality. What is the average wait time in the emergency department? What is the time between cases in the OR? What is the turnaround time for labs? With value-based purchasing, improved throughput will benefit the organization by reducing cost and increasing patient satisfaction – two key metrics.

- **Quality.** With value-based purchasing, hospitals are required to assess and report measures of quality relative to defined benchmarks. Did patients receive drugs within the appropriate time period? Were they given discharge instructions? Did the care manager schedule follow-up visits? How many falls occurred in the hospital? How many hospital-acquired infections? Hospitals not reporting quality metrics are subject to penalties. For CMS (Centers for Medicare & Medicaid Services) value-based purchasing, the penalty/incentive phase began in 2013. Hospital performance is being judged on both achievement relative to the national benchmark and improvement relative to internal prior score.

- **Readmissions**. Quality will also be assessed based on the rates of readmissions for all causes within a certain time period for specific patient populations. For example, what are the rates of heart failure, pneumonia and AMI readmissions within a 30- and 90-day period? In 2013, Medicare began enforcing penalties for 30-day readmissions. Penalties will increase in future years.

- **Mortality rates.** What are the hospital's mortality rates for pneumonia, heart failure and acute myocardial infarction (AMI) among its patient populations? Beginning in 2014, Medicare will include this measure in its value based purchasing formula. High mortality rates in pneumonia, health failure and AMI will result in loss of incentives.

- **Patient satisfaction.** Patient satisfaction is more than just a concern and a goal, it's now tied directly to payment models. How satisfied are patients with their care experience? Was the room satisfactory? Was the family comfortable? Would they recommend the hospital? Concern for patient satisfaction is a key metric in Medicare's value-based payment system. In 2013 the patient satisfaction scores were weighted at 30%.

- **Cost per episode of care.** Containing costs is now more important than ever as value-based purchasing systems strive to keep treatment consistent and expenditures appropriate and predictable. Consider: what are the costs of the individual components of care? What are the costs of the episode across the continuum of care? Which clinical processes have the greatest cost variation? Reducing this variation will improve the cost structure. Plus, in 2015, CMS plans to adopt a new measure—Medicare spending per beneficiary.
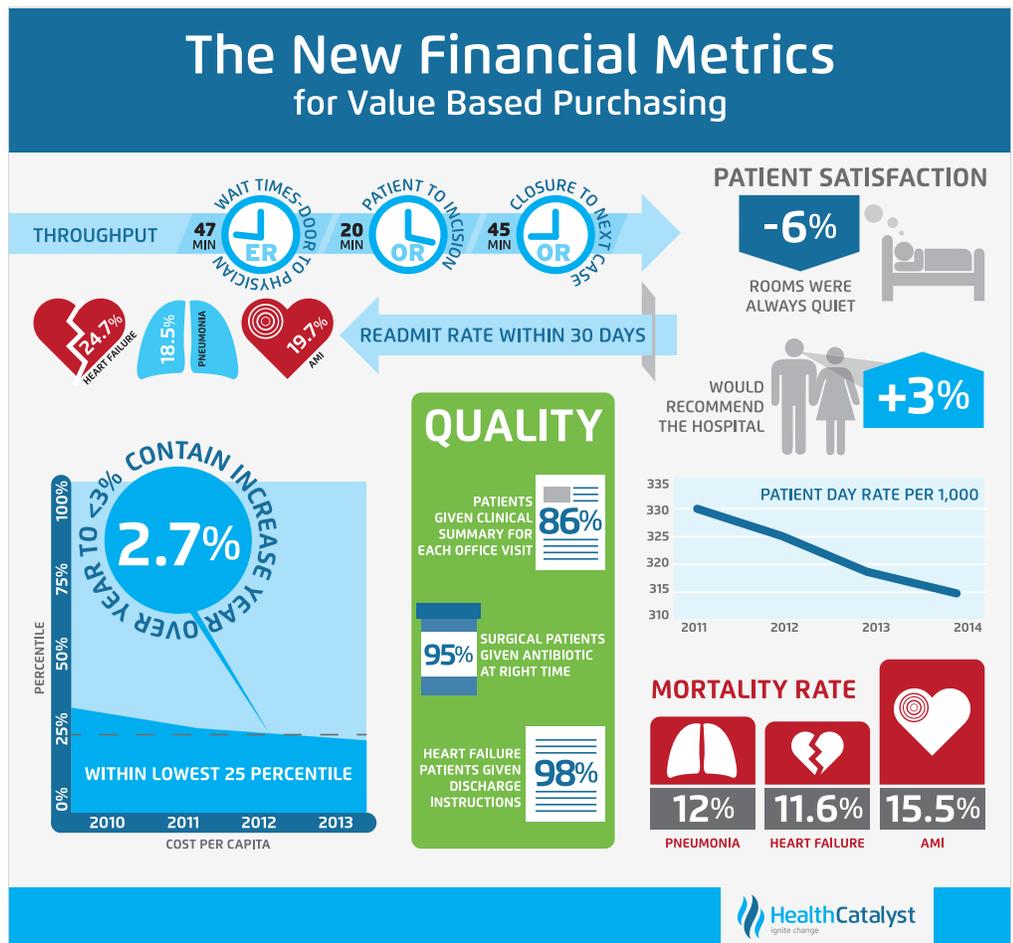

The New Financial Metrics
for Value Based Purchasing

THROUGHPUT

WAIT TIMES-DOOR TO PHYSICIAN — 47 MIN ER

PATIENT TO INCISION — 20 MIN OR

CLOSURE TO NEXT CASE — 45 MIN OR

PATIENT SATISFACTION

-6% ROOMS WERE ALWAYS QUIET

24.7% HEART FAILURE — 18.5% PNEUMONIA — 19.7% AMI

READMIT RATE WITHIN 30 DAYS

WOULD RECOMMEND THE HOSPITAL — +3%

CONTAIN INCREASE YEAR OVER YEAR TO <3%

2.7%

PERCENTILE: 0% 25% 50% 75% 100%

WITHIN LOWEST 25 PERCENTILE

2010 2011 2012 2013

COST PER CAPITA

QUALITY

PATIENTS GIVEN CLINICAL SUMMARY FOR EACH OFFICE VISIT — 86%

SURGICAL PATIENTS GIVEN ANTIBIOTIC AT RIGHT TIME — 95%

HEART FAILURE PATIENTS GIVEN DISCHARGE INSTRUCTIONS — 98%

PATIENT DAY RATE PER 1,000
335 330 325 320 315 310
2011 2012 2013 2014

MORTALITY RATE
12% PNEUMONIA — 11.6% HEART FAILURE — 15.5% AMI

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Figure 1: Healthcare's new financial metrics

> This liberated data will provide a single source of truth and an information foundation that will enable a health system to understand and impact quality and cost.

Each of these metrics carries potential penalties and/or incentives under the various payment innovation programs sponsored by the Centers for Medicare and Medicaid Services (CMS). Organizations that thrive in a value-based environment will routinely track these measures as part of their reporting and monitoring structure rather than sponsor occasional studies of their performance in these areas.

Data as the Solution

As clinical quality metrics have a greater impact on the bottom line, healthcare financial executives are faced with new challenges: how will these metrics be tracked, measured, analyzed, and translated into financial terms? The answer begins with the collection of data.

Using data, however, is not as straightforward as it sounds. Significant barriers exist to leveraging data effectively to drive value-based decision making.

Barrier 1: Financial and Clinical Data Siloes

Traditionally, financial data and clinical data were housed in separate systems; financial data needed to be available to certain teams tasked with specific functions such as billing. Clinical data were housed in systems that would allow teams to focus specifically on treatment and care. Financial data are often so far removed from clinical data that it becomes difficult to understand the relationship between the two. This is compounded by the fact that most hospitals and health systems will have a variety of transactional system siloes throughout the care continuum.

While numerous health systems have made headway in aggregating their clinical data to create longitudinal health records, their efforts are often hampered by the unstructured nature of clinical documentation (manually going through charts is rarely the most efficient way to track metrics). Plus clinical data aggregation alone does not incorporate the financial, operational, and patient-experience data needed to fully visualize the organization's quality/cost equation.

> The frontline team—those who are closest to the processes that need refinement—analyze the data to determine what to target and how best to realize improvement.

Barrier 2: Outdated Reporting Processes
Gathering and reporting processes in the healthcare environment may be outdated and insufficient for the complexities of the value-based environment. For examples, the quality team may provides metrics on readmissions, hospital acquired conditions, and core measures for clinical processes, while finance is responsible for cost and payment data. Getting data from both parties may become a manual collection process.

The following are two significant drawbacks of this:

1. Inefficient data collection that doesn't scale.
A typical scenario for gathering data for analysis may work as follows:

Step 1: Hospital executives determine a need for data to track strategic and operational goals.

Step 2: The finance/planning team outlines the metrics they need to include.

Step 3: Data for the project are gathered from the individual teams who regularly maintain and report on it.

Step 5: Based on a prescribed reporting calendar, collected data are assembled.

Step 6: Data are returned to executives via a dashboard.

While digitized dashboards are convenient for executives, a significant amount of manual work is required to pull the information together, which slows down the process and leaves reports further from real time. The burden of this manual process is compounded by the fact that these reports must be updated on a regular basis.

Some health systems have adopted dashboard programs for point solutions that remove some of the manual effort from the process. While these may provide insight about a targeted issue, they do not link clinical, financial, operational, and patient experience data in the way that value-based decisions require. Because the solutions aren't linked, individuals still have to determine how to fit these reports together and make collective sense of them. The ability to drill into data and ask questions is missing.

2. Inconsistent data without a single source of truth
When people throughout the organization are accessing data in different ways and from multiple sources, inconsistency and variability among the data are common. It is not unheard of, for example, for two executives to present conflicting data about emergency department admissions or length-of-stay trends simply because they relied on different data collection methods. Inconsistencies like these can lead to a distrust of the data. If decision-makers don't trust the data, they can't be sure they are making the best decisions for the organization.

MAKING THE DATA WORK
Health systems can overcome these challenges to successfully manage costs in a value-based environment by finding effective ways to leverage their two most important assets for effecting cost and quality change: data and clinical teams. Finance executives provide leadership to actively assist in this effort.

> Just as finance needs to understand the impact clinical processes have on the bottom line, clinicians need to also understand the financial implications of their clinical decisions.

The Data, People, and Process Solution
The keys to successfully navigating the quality and cost demands of value-based care are:

- Aggregating and analyzing data from source systems throughout the enterprise

- Creating permanent frontline teams of clinicians, quality personnel, analysts and technologists supported by a financial analyst, and

- Empowering these teams to link clinical and financial data to guide and realize improvement.

Liberate and Aggregate Clinical and Financial Data
An enterprise data warehouse (EDW) such as one designed by Health Catalyst is the key to liberating clinical and financial data and linking it together to provide a full picture of trends and opportunities. A data warehouse integrates data from key source applications and makes them available for reporting and analysis.

An effective EDW in the value-based environment aggregates data from a wide variety of sources. It must accommodate all clinical and financial data tables involved with the programs the organization is trying to impact. It also needs to include information from supply-chain, labor-productivity and other systems to calculate the true cost of an episode of care.

But consider this: data rules and vocabularies are constantly changing in healthcare. So to be truly effective, an EDW should be "late-binding"—referring to when and how tightly data from the source applications are bound to the rules and vocabularies that make them useful within the data warehouse. A late-binding model assembles data from source applications just in time to address new analytic uses. This agile approach delays making dramatic changes to the data until after clinicians and other end-users have had time to review them and form hypotheses. This addresses the need for clinical and financial analysis of near-real-time information to track and improve care for patient populations.

Having all the necessary data in one place is the first step. This liberated data will provide a single source of truth and an information foundation that will enable a health system to understand and impact quality and cost.

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USING CLINICAL AND FINANCIAL DATA EFFECTIVELY TO DRIVE SUSTAINABLE IMPROVEMENT

With the data in hand, health systems must then determine how to use that data to meet cost and quality goals. Most organizations employ a top-down approach for driving change that relies on executive dashboards; however, a more effective bottom-up approach is supported by multidisciplinary, permanent teams operating on the front lines of clinical care and using clinical and financial data to drive improvements. Here's why:

The Health Catalyst Approach in Action

A specialty hospital targeted length of stay (LOS) following an appendectomy as a key opportunity for quality and cost improvement. Their multidisciplinary frontline team analyzed the data aggregated in the EDW and discovered that clinicians were prescribing a wide range of antibiotics after an appendectomy. The data also showed that some antibiotics produced better outcomes. The frontline team then decided on a protocol for the entire facility.

Interesting, the antibiotic the team advocated was more expensive than other options. Any clinician who knew that the hospital was trying to cut costs might be drawn to a lower-cost medication. However, because the hospital had linked the clinical and financial data in the data warehouse and made it available via dashboards, clinicians could see that while pharmacy costs rose, a parallel drop in LOS more than made up the difference.

Once clinicians saw these results and caught the vision, they began requesting further refinements to the system. They began asking questions about other factors that could affect clinical outcomes and LOS and became willing and proactive participants in the process

Problems with the Top-down Approach to Data-driven Change
The top-down approach commonly deployed in health systems consists of using executive dashboards to rank facilities, departments, and individuals based on their performance relative to defined benchmarks. This approach operates on the assumption that pressure from the top will drive change.

However, this strategy has several key drawbacks:

- Data and insights from executive dashboards may not show the same data as clinical workflow dashboards. Top-down dashboard metrics that are not shared do more to worry and distract clinicians than improve care.

- Dashboard summaries can be incomplete and often omit key measures needed to improve a clinical process.

- Executive priorities as defined on the dashboard may not match frontline clinical needs. Metrics and mandates that come from the top don't always take into account the realities of the care process.

This kind of approach—using dashboards sometimes referred to as "rank and spank" tools—can set off fire drills rather than prompting root-cause analysis and sustainable change.

A better method engages clinicians in a proactive team process for improvement. Dashboards with high-level goals should be shared with clinical teams and across the organization as alignment of goals at all levels increases the likelihood goals will be met. The key criteria for dashboards is transparency.

Building a team from the bottom up to drive change
Health Catalyst recommends forming multi-disciplinary, permanent, frontline teams that leverage aggregated clinical and financial data to drive sustainable improvement. These frontline teams consist of clinicians, quality personnel, analysts, and technologists and are supported by a financial representative. This approach engages frontline personnel so that they drive quality improvement.

The frontline team—those who are closest to the processes that need refinement—analyze the data to determine what to target and how best to realize improvement. The team works together to determine how to improve certain outcomes—for which the team is accountable—using the goals of the organization as a guide and implements the protocols they deem most effective. Goals are continually monitored to ensure they're focused on sustaining quality and financial improvements as well as clinical and operational outcomes.

This type of grassroots-change pathway empowers the entire team to identify opportunities for improvement, while also allowing them to see exactly how the quality/cost equation improves through their efforts.

Though the frontline team is at the helm of the quality initiative, to be truly effective, the team needs to report to a guidance team comprised of members of management who can eliminate roadblocks, prioritize work efforts, and set clear goals for the entire organization

Using an EDW to Pinpoint Opportunity in Asthma Care

Using the EDW to perform a financial and clinical assessment of variability of care and resource consumption, a hospital identified a significant quality-improvement opportunity for asthma care. The data showed that physicians were ordering a high volume of chest X-rays for asthma patients when only 5 percent of these X-rays were indicated.

The integrated team of clinicians, technologists, analysts, and quality personnel worked together to build evidence-based care guidelines into the X-ray workflow. One challenge the team faced was convincing clinicians to change their ordering behaviors. In the past, physicians had been quick to deny the validity of data that questioned their clinical decisions. However, the team was able to drill down into near real-time data to convince physicians of the need to change ordering patterns.

The resulting change happened quickly: the team produced a 15 percent reduction in unnecessary chest X-rays in just 45 days.

Turning the Tables: Getting Clinicians to Understand Finance

Just as finance needs to understand the impact clinical processes have on the bottom line, clinicians need to also understand the financial implications of their clinical decisions. But for finance executives, this may seem like an optimistic goal: can an organization really get clinicians involved in looking at both clinical and financial data?

By creating a learning organization in which clinical and financial personnel listen to each other and educate each other, the answer is "yes." This level of collaboration—always informed by integrated data—enables a health system to effect sustainable improvement in a value-based environment.

To accomplish this, Health Catalyst recommends finance personnel present data to the clinical team to educate them on what the financial data mean. Then, the clinical team can help define how to best adapt care to improve outcomes and lower costs.

For example, financial analysts can use data to show clinicians the variation in how they are delivering care using tools like the bubble chart (below). Each bubble represents an individual provider, and the size of the bubble reflects the number of cases handled by that provider across a specific patient population. Variation in cost per case is displayed for the severity level of the cases treated. Noting the variation in cost per case, the data indicates an opportunity to study the clinical performance and apply lessons learned to improve quality and costs.

Septicemia and Disseminated Infections APRDRG 720 with four severity levels
Direct Variable Cost by Physicia

Bubbles represent individual clinicians; size of bubble indicates the number of related cases per clinician. Variation in treatment cost spans across the X axis indicating a wide variety of costs associated with treatment by individual clinicians. For example, severity level three (green) shows direct variable cost per case ranging from $500 to $12,000. Clinical teams can examine the data and make recommendations to narrow this cost variation.

Presenting this data to clinicians can prompt productive discussions about which treatment protocols offer the best outcomes for patients and whether the care delivered was truly indicated. Together, clinical personnel can then determine what care can be standardized and which costs reduced. Finance can model the change and tell the team what will be the expected results.

A final important point in this discussion of frontline teams is that they must be permanent. Teams should not be dissolved once the goals are achieved. The organization needs to incorporate teams into its structure and task them to watch measures on an ongoing basis. Teams must have the power and accountability to make changes as needed to constantly improve care. Without consistent, ongoing surveillance of quality and cost measures, gains may begin to fall away.

CONCLUSION

Now is the time for financial executives to begin planning for change in the current fee-for-service reimbursement model. With the industry moving toward value-based purchasing, financial executives must embrace a paradigm shift away from volume and embrace quality care as a key resource to ensure the financial health of the organization.

Health Catalyst's Late-Binding Enterprise Data Warehouse platform is an ideal solution for managing the new metrics of healthcare. Combined with the effective collaboration of financial and clinical personnel, it creates a clear pathway for financial executives' success under the new value-based paradigm.

ABOUT THE AUTHOR:

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About Health Catalyst

Based in Salt Lake City, Health Catalyst delivers a proven, Late-Binding™ Data Warehouse platform and analytic applications that actually work in today's transforming healthcare environment. Health Catalyst data warehouse platforms aggregate and harness more than 3 trillion data points utilized in population health and ACO projects in support of over 22 million unique patients. Health Catalyst platform clients operate 96 hospitals and 1,095 clinics that account for over $77 billion in care delivered annually. Health Catalyst maintains a current KLAS customer satisfaction score of 90/100, received the highest vendor rating in Chilmark's 2013 Clinical Analytics Market Trends Report, and was selected as a 2013 Gartner Cool Vendor. Health Catalyst was also recognized in 2013 as one of the best places to work by both Modern Healthcare magazine and Utah Business magazine.

Health Catalyst's platform and applications are being utilized at leading health systems including Allina Health, Indiana University Health, Memorial Hospital at Gulfport, MultiCare Health System, North Memorial Health Care, Providence Health & Services, Stanford Hospital & Clinics, and Texas Children's Hospital. Health Catalyst investors include CHV Capital (an Indiana University Health Company), HB Ventures, Kaiser Permanente Ventures, Norwest Venture Partners, Partners HealthCare, Sequoia Capital, and Sorenson Capital.

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