

How to Drive ROI in Your Healthcare Improvement Projects

Bobbi Brown
 VP Financial Engagement
 Health Catalyst

Leslie Hough Falk
 RN, MBA, PMP
 Health Catalyst



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ABSTRACT

To thrive under new value-based care models, hospitals and health systems must improve their delivery of care while streamlining operations. To succeed with this Herculean task, organizations will need to overcome inter-departmental differences and take a multi-disciplinary, collaborative approach to improving financial, operational and clinical outcomes. This executive report outlines a systematic process for building a holistic outcomes-improvement program and measuring its return on investment.

Today's healthcare organizations face an unprecedented array of new challenges, many contradictory in nature. As emerging value-based payment models intersect with population-based care, healthcare organizations must find ways to increase the quality of care while decreasing costs; ensure better outcomes despite caring for larger numbers of patients; and become more efficient at *preventing* many services, such as readmissions, that once contributed to their bottom line.

To help solve this Gordian knot, healthcare organizations of all kinds and sizes are accelerating their efforts to improve quality, streamline operations and

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reduce costs. Simultaneously, they are increasing their investments in “business intelligence” (BI) technologies such as enterprise data warehouses (EDWs), and analytics to assist in this transformation. According to the research firm KLAS, a “tidal wave” of healthcare BI purchases is expected by 2015, with more than half of the providers in the U.S. looking to buy or replace their BI solutions in that period of time.¹ These data extraction, prediction, forecasting and trending technologies promise not only to help manage the regulatory and reimbursement challenges ahead, but also to reap the benefits of healthcare’s investments in earlier technologies such as enterprise resource planning (ERP) systems and electronic medical records (EMRs).

Still, many healthcare finance executives have long harbored doubts about the return on investment (ROI) from those earlier systems. At a time when the average hospital’s margins are stagnating at two percent,² the prospect of investing in yet another new wave of “indispensable” technologies has them asking some tough questions about ROI. Will the new technologies prove their worth? Are the ROI predictions of vendors to be trusted?

With the answers to these questions unclear, a growing number of healthcare finance managers are engaging in the complex and time-consuming process of developing their own ROI estimates for technologies and programs intended to improve clinical quality and streamline operations – both prospectively to justify an investment and retrospectively to prove its value. In doing so, they are confronting one of the most basic questions in healthcare finance: How do you measure the financial ROI from improvements in outcomes that affect a complex and interdependent matrix of quality, patient satisfaction and operational efficiency?

THE EVOLVING VALUE-BASED MODEL OF ROI

In a value-based environment, operational and clinical quality improvement programs are critical to ensuring an organization’s long-term success. As a result, technology investments are increasingly determined based on their ability to contribute to operational and clinical quality improvement.

In the past, the ROI of technically-driven outcomes-improvement projects was relatively straightforward. The analysis tended to focus on measurements such as on-time under-budget implementations, lack of system downtime, the speed of user training and similar IT-centric measures. Today, this technology-centric view is giving way to a benefits-driven ROI model in which the strategic goals of the hospital are the measure of business value.³ In a value-based environment, operational and clinical quality improvement programs are critical to ensuring an organization’s long-term success. As a result, technology investments are increasingly determined based on their ability to contribute to operational and clinical quality improvement.

The Healthcare Information and Management Systems Society (HIMSS) has developed a value suite called STEPS™ that reflects this new perspective on ROI measurement. The [STEPS](#) describe HIMSS’s five areas of value benefit to patients, providers and communities, measuring improvements in:

- Satisfaction of patients, providers, staff and others
- Treatment/Clinical including patient safety, quality of care and efficiency
- Electronic Information/Data including use of evidence-based guidelines, data sharing, population health and quality reporting

- Prevention and Patient Education including improvements in disease surveillance and patient compliance with therapies
- Savings from improvements such as reduced days in accounts receivable and increased patient volume.

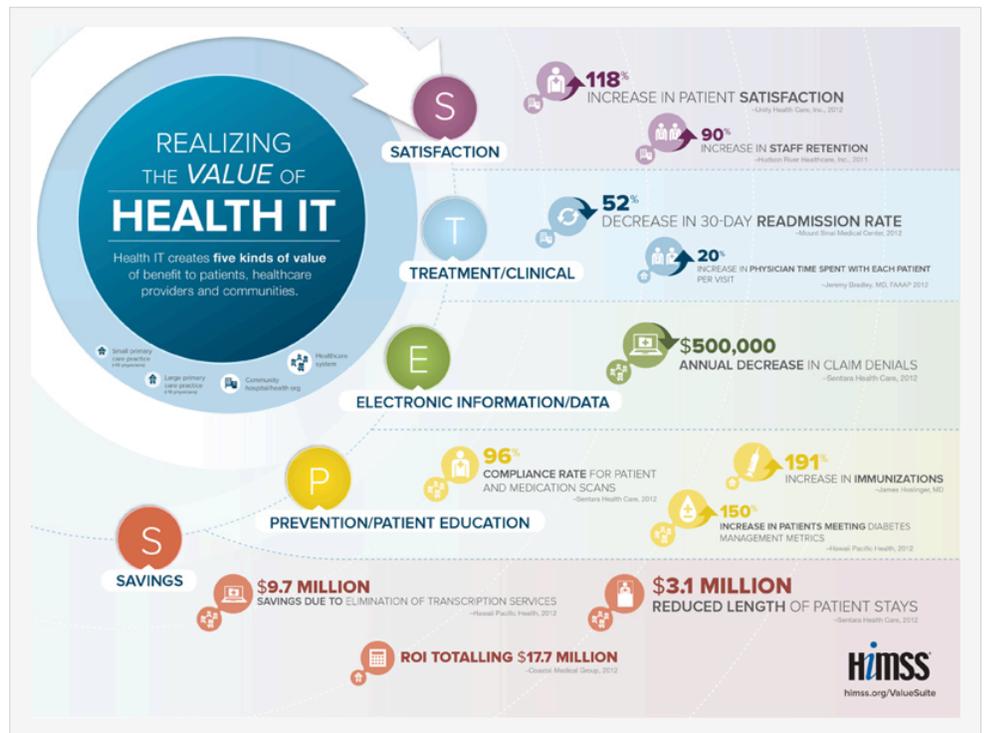


Figure 1: The HIMSS Health Value STEPS Model

The HIMSS model reflects the growing consensus that IT success and clinical-operational improvement are interdependent and ought to be measured in tandem. Healthcare ROI encompasses more than money saved or earned; it must take into account both qualitative benefits such as improved patient safety and improved relationships with patients, as well as streamlined clinical operations among others measures.⁴ All of these measures are interdependent. Improvements in the quality of care within an organization cause a ripple effect that can generate secondary financial returns in the form of shorter lengths of stay, fewer readmissions and similar measures closely related to quality. In failing to consider these corollary benefits, standard ROI models fail to deliver a holistic view of the value of an organization's investments.

The HIMSS model provides some ideas for ROI measurements and is a starting point to view the work of other healthcare organizations. The Health Catalyst ROI tools – Health Catalyst Clinical Improvement Financial Tool and Health Catalyst Executive Communications Tool – introduced in this paper take into account the five areas suggested by HIMSS and establish a framework that enables communication between multidisciplinary teams, including finance, and provide guidelines for making investments that enhance quality while lowering costs.

A FAILURE TO CONNECT: CLINICAL/OPERATIONAL VS. FINANCE

A key reason why many healthcare organizations still embrace the old ROI models is the persistent cultural divide between clinicians and finance. Clinicians are intent on improving the care of individual patients, not the organization's bottom line. Financial managers are equally concerned with patient welfare but focus on aggregate financial measures such as costs and ROI across the population. When financial managers try to impose cost controls or other disciplinary measures on care delivery, clinicians may perceive the change as a threat to patient welfare, even when its effect is harmless.

The clinical perspective has lately been reinforced by healthcare reform's broad focus on measuring clinical value. Meaningful use, value-based payment, patient-centered care: with so much focus on clinical quality, it is natural for organizations to focus their outcomes-improvement efforts on clinical measures alone. Unfortunately, in doing so, they perpetuate the clinical-financial divide by neglecting to incorporate financial measures into their improvement goals.

To illustrate this divide, consider the Institute for Healthcare Improvement's (IHI) "Triple Aim"⁵ for optimizing health system performance, which calls for:

- Improving the patient experience of care (including quality and satisfaction);
- Improving the health of populations;
- Reducing the per capita cost of health care.

In today's healthcare settings, most frontline staff are not accountable for all three dimensions. Clinicians focus on improving quality and the patient experience and hope that this will improve the health of their population. Financial managers strive to reduce per-capita costs. Each constituency has a different definition of value and, consequently, its own ideas about the return on IT and clinical quality investments.

THE IMPORTANCE OF THE FINANCIAL PERSPECTIVE

To bridge the cultural divide between clinicians, clinical operations and finance, it is important that all parties understand the inexorable link between clinical decisions and their financial impacts. A typical example of the *failure* to do so is an organization that bases its outcomes-improvement efforts on clinical data from the EMR alone, overlooking the opportunity to analyze a rich matrix of additional data from its financial, patient satisfaction, operational and other enterprise applications. Because the data source is merely one among many silos, this approach provides a narrow view of the organization with limited analytic value.

By contrast, an organization that uses an EDW to analyze data from all available sources is able to use that far larger data set to very quickly answer more complex and informative questions. How would length of stay (LOS) be impacted if evidence-based protocol was used to standardize care delivery? What impact would it have on cost per case? How would the patient's satisfaction level be affected? How many of the early-discharged patients would be readmitted to the hospital within 30, 60 or 90 days? These types of questions, traditionally the

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IDENTIFY DIRECT BENEFITS

Waste: Reducing unnecessary chest X-rays

[Texas Children's Hospital](#) in Houston is the nation's largest children's hospital, affiliated with the Baylor University School of Medicine. Like many large organizations, Texas Children's had historically been challenged to decide on care improvement opportunities that would have the greatest impact. A hospital data warehouse and its data discovery application enabled Texas Children's to prioritize outcomes-improvement programs. In its first project, the hospital identified that a higher-than-normal volume of chest X-rays was being administered to asthma patients. Texas Children's multi-disciplinary outcomes-improvement team traced the problem to a faulty order set within the hospital's EMR and quickly rewrote the order set to reflect best practices. Within six months, the number of chest X-rays ordered for asthma patients had declined by 15 percent; today it has declined by 35 percent.

RESULTS:

- Established and drove usage adoption of evidence-based order sets
- 35 percent sustained decrease in unnecessary chest X-rays
- Increased usage of an EMR-based asthma action plan by 90 percent of physicians

purview of financial managers, have relevance for clinicians as well. For hospitals to succeed under value-based care, clinicians' actions must be guided by both their clinical and financial impact.

Reflecting this thinking, leading healthcare organizations including Intermountain Health Care and Kaiser Permanente have long required multidisciplinary quality improvement teams to include financial managers as well as clinicians, operations and IT experts. To weed out poor IT and quality improvement investments, these organizations also require quality improvement teams to identify and measure a three-pronged matrix of potential benefits from a project – quality, patient satisfaction and financial benefits. Projects that would improve all three areas are prioritized for implementation. This type of in-depth ROI analysis is a valuable tool for illuminating and ultimately leveraging the inseparable link between clinical, operational and financial data.

THE HEALTH CATALYST FOUR-STEP PROCESS AND TOOLS FOR INCLUDING ROI ANALYSIS IN YOUR CLINICAL IMPROVEMENT PROGRAMS

The following four-step Health Catalyst process defines best practices you can use for creating and measuring ROI from your clinical and operational improvement projects supported by information technology. This comprehensive plan is based on decades of experience managing successful outcomes-improvement initiatives in some of our nation's leading healthcare organizations.

A precursor to Step One is the initial stage of identifying areas for clinical improvement. Use of a [Late-Binding™ EDW](#) can greatly streamline and speed this process – as well as assist the four steps – by delivering an enterprise-wide view of data from an organization's clinical, operational, financial and patient satisfaction systems. An [analytics tool](#) built on top of the EDW helps to prioritize outcomes-improvement interventions using Pareto analysis. This statistical technique identifies process changes that will produce the most significant overall effect across a health system. The tool helps ensure the outcomes-improvement teams focus on improving areas that will have the greatest impact on patient safety, quality and the organization's bottom line.

Once you have identified a clinical or operational area for improvement, the first two steps in the process are designed to clarify the purpose of the project and win executive approval. The idea is to scope the project and ensure it passes the strategy and ROI litmus test before proceeding with targeted interventions.

HEALTH CATALYST STEP ONE: DEFINE THE PROJECT AND THE BUSINESS NEED

The first step is to define the project and provide business justification.

State the proposal clearly. Keep this basic statement to one or two sentences. Keep it simple, and resist the urge to add benefits to this section.

Justify the business need. The proposal's reviewers will need to clearly understand the business justification for the project and the anticipated benefits. The business need must be in strategic alignment with the organization's goals. Remember that clear objectives lead to better measurements.

IDENTIFY DIRECT BENEFITS

Clinical Improvement: Reducing hospital readmission rates for heart failure

A [large medical center](#) used a Key Process Analysis tool built on top of its EDW to identify cardiology as an area with high variation that consumed significant resources. Armed with that insight and its new technology capabilities, the center's clinical leaders developed three evidence-based, heart failure (HF)-specific, best practice interventions – faster and more consistent medication reconciliation, post-discharge doctor's appointments and post-discharge phone calls to check on patients' status.

RESULTS:

- 21 percent seasonally adjusted reduction in 30-day HF readmissions
- 14 percent seasonally adjusted reduction in 90-day HF readmissions
- 63 percent increase in post-discharge medication reconciliation

HEALTH CATALYST STEP TWO: BEGIN TO QUANTIFY ROI

As part of the project approval process, the second step is to perform an initial estimate of ROI based on available information. At this point, quantified benefits can only be estimated, but specific targets must still be set.

Identify all costs. These could include hardware, software, maintenance, personnel required for the project (clinicians, data architects, outcomes analysts, knowledge managers, etc.), consulting fees, training, materials, travel, etc.

Estimate benefits. Again, at this stage the benefits are estimated. This can be accomplished using such tools as industry benchmarks for outcomes-improvement projects, vendor case studies and internal estimates. Benefits fall into one of three categories: direct benefits, indirect benefits and revenue opportunities.

Identify direct benefits. Direct benefits and savings tend to fall into one of two buckets, either savings from enhanced efficiency and productivity, or savings from clinical improvement and waste reduction. Examples of efficiency/productivity savings include more effective use of internal resources; reductions in FTEs or less overtime; business process improvement; supply chain standardization allowing lower supply costs; increased departmental capacity; and reductions in capital expense. Examples of savings from clinical improvements and waste reduction include reducing unnecessary tests and procedures; lowering LOS; reductions in uncompensated hospital readmissions; lower medication cost per case or per capita; fewer ICU days; and patient safety improvements leading to fewer complications or medical errors (see *Identify Direct Benefits on pages 5, 6 & 7*).

To simplify and guide the process, multidisciplinary teams can utilize a comprehensive project financial overview. The [Health Catalyst Clinical Improvement Financial Tool](#), (see *Figure 2 on page 7*), provides the organization with a financial framework to help clinicians work with their finance team member(s) to estimate quantitative and qualitative costs and benefits for the project. Finance can use this tool in the current step to estimate project ROI and in step four to perform actual project ROI. This financial tool is not intended to replace an organization's existing methods for calculating costs and benefits; instead it is a communication tool that enables a comprehensive overview of measures for multidisciplinary teams to consider.

Identify indirect or intangible benefits and set improvement targets. Indirect or intangible benefits tend to be difficult to measure, in part because they can provide longer-term benefits that need to be tracked over time. One example is an improved medical outcome such as a reduction in future infections, which will require long-term analysis to reveal an impact on costs. Another example is an increase in patient satisfaction as measured by the organizations' HCAHPS score (Hospital Consumer Assessment of Healthcare Providers and Systems).

IDENTIFY DIRECT BENEFITS

Productivity: Reducing labor and costs tied to producing clinical analytics reports

[Texas Children's Hospital's](#) EMR has proved tremendously valuable as the means of digitizing care across the hospital. But hospital leaders found that clinical EMR data was hard to extract and combine with other data sources in a timely manner. Clinicians and quality teams lacked access to meaningful information they could use to guide clinical quality interventions and other improvements. The hospital deployed an EDW to unlock meaningful data trapped in the EMR and other applications. The EDW has significantly improved efficiencies, lowered costs, and enabled Texas Children's to reassign several EMR analysts to other critical duties.

RESULTS:

- 67 percent savings on labor costs, on average, for EDW-generated reports
- 25 percent faster turnaround of reports
- Average time to build reports declined from 97 hours to less than 30 hours

Clinical Improvement Financial Tool

Financial Analysis

Project Cost Components	Initial	Year 1	Year 2	Year 3	Year 4
Data architect	\$ -	\$ -	\$ -	\$ -	\$ -
Outcomes analyst	\$ -	\$ -	\$ -	\$ -	\$ -
Knowledge manager	\$ -	\$ -	\$ -	\$ -	\$ -
Application (DBA)administrator	\$ -	\$ -	\$ -	\$ -	\$ -
Consulting	\$ -	\$ -	\$ -	\$ -	\$ -
Training	\$ -	\$ -	\$ -	\$ -	\$ -
Materials	\$ -	\$ -	\$ -	\$ -	\$ -
Travel	\$ -	\$ -	\$ -	\$ -	\$ -
Other - Specify	\$ -	\$ -	\$ -	\$ -	\$ -
Total Non IT Project Costs	\$ -	\$ -	\$ -	\$ -	\$ -
IT Cost Components					
Software core	\$ -	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -	\$ -
Analytical Applications					
Modules	\$ -	\$ -	\$ -	\$ -	\$ -
Annual Maintenance and Support	\$ -	\$ -	\$ -	\$ -	\$ -
Total IT	\$ -	\$ -	\$ -	\$ -	\$ -
Total Costs	\$ -	\$ -	\$ -	\$ -	\$ -
Opportunity or Indirect Benefits/Savings					
Indirect Benefits					
Avoiding purchase of new systems	\$ -	\$ -	\$ -	\$ -	\$ -
Increase in patient satisfaction scores	\$ -	\$ -	\$ -	\$ -	\$ -
Increase in employee satisfaction scores	\$ -	\$ -	\$ -	\$ -	\$ -
Staff turnover reduction	\$ -	\$ -	\$ -	\$ -	\$ -
Data accuracy and timeliness	\$ -	\$ -	\$ -	\$ -	\$ -
Improve clinical quality of care- measurable change in metrics	\$ -	\$ -	\$ -	\$ -	\$ -
Better, faster decisions	\$ -	\$ -	\$ -	\$ -	\$ -
Lower wait time in ED	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction in mortality	\$ -	\$ -	\$ -	\$ -	\$ -
Other-ongoing	\$ -	\$ -	\$ -	\$ -	\$ -
Total Indirect Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
Direct Benefits/Savings					
Efficiency/Productivity					
Effective use of internal resources	\$ -	\$ -	\$ -	\$ -	\$ -
Labor reduction- data gathering vs analytical	\$ -	\$ -	\$ -	\$ -	\$ -
Labor reduction- report generation	\$ -	\$ -	\$ -	\$ -	\$ -
Labor reduction- billing reimbursement	\$ -	\$ -	\$ -	\$ -	\$ -
Labor reduction- chart abstraction	\$ -	\$ -	\$ -	\$ -	\$ -
Redeployment of resources	\$ -	\$ -	\$ -	\$ -	\$ -
Labor savings	\$ -	\$ -	\$ -	\$ -	\$ -
Reduce FTEs	\$ -	\$ -	\$ -	\$ -	\$ -
Lower OT and premium	\$ -	\$ -	\$ -	\$ -	\$ -
Lower outside labor	\$ -	\$ -	\$ -	\$ -	\$ -
Reduce IT support for reports	\$ -	\$ -	\$ -	\$ -	\$ -
Business process improvement	\$ -	\$ -	\$ -	\$ -	\$ -
Supply chain- standardization, negotiations for lower supply cost	\$ -	\$ -	\$ -	\$ -	\$ -
Generic drug usage	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction of outside contracts	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction of other expense	\$ -	\$ -	\$ -	\$ -	\$ -
Higher inventory turns	\$ -	\$ -	\$ -	\$ -	\$ -
Increased capacity in department	\$ -	\$ -	\$ -	\$ -	\$ -
Throughput in radiology, cath lab, OR, lab, ED	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced software costs for replaced products	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction in capital expense	\$ -	\$ -	\$ -	\$ -	\$ -
Clinical Improvement/Waste Reduction					
Reduce unnecessary procedures/tests	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced LOS	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced readmission rate	\$ -	\$ -	\$ -	\$ -	\$ -
Lower utilization in ancillary services radiology, cath lab, lab-lower cost per case	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction in medication cost per case/per capita	\$ -	\$ -	\$ -	\$ -	\$ -
Patient flow- Lower ICU days	\$ -	\$ -	\$ -	\$ -	\$ -
Adherence to clinical guidelines/evidence based medicine	\$ -	\$ -	\$ -	\$ -	\$ -
Improved turn around time for tests	\$ -	\$ -	\$ -	\$ -	\$ -
Patient injury prevention	\$ -	\$ -	\$ -	\$ -	\$ -
Reduce complications	\$ -	\$ -	\$ -	\$ -	\$ -
Reduce medical errors	\$ -	\$ -	\$ -	\$ -	\$ -
Avoid preventable ER visits and hospitalizations	\$ -	\$ -	\$ -	\$ -	\$ -
Population health	\$ -	\$ -	\$ -	\$ -	\$ -
Improvement in clinical outcomes- reduction in per capita disease registry rates	\$ -	\$ -	\$ -	\$ -	\$ -
Compliance	\$ -	\$ -	\$ -	\$ -	\$ -
Screening rates	\$ -	\$ -	\$ -	\$ -	\$ -
Patients meeting metrics for disease management	\$ -	\$ -	\$ -	\$ -	\$ -
Lower medical expense based on per member per month	\$ -	\$ -	\$ -	\$ -	\$ -
Lower out of network expense	\$ -	\$ -	\$ -	\$ -	\$ -
Revenue					
Higher market share- volume increases	\$ -	\$ -	\$ -	\$ -	\$ -
Increase in contract compliance	\$ -	\$ -	\$ -	\$ -	\$ -
Additional grant funding	\$ -	\$ -	\$ -	\$ -	\$ -
Improve charge capture, clinical documentation	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction in bad debt	\$ -	\$ -	\$ -	\$ -	\$ -
Reduction in AR days	\$ -	\$ -	\$ -	\$ -	\$ -
Improved scores for value based programs	\$ -	\$ -	\$ -	\$ -	\$ -
Payer contracting- negotiating rates, incentives, P4P	\$ -	\$ -	\$ -	\$ -	\$ -
Decrease in claim denials	\$ -	\$ -	\$ -	\$ -	\$ -
Increased referrals	\$ -	\$ -	\$ -	\$ -	\$ -
Total Direct Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
Total Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
Total Direct Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
(Less) Total Project Costs	\$ -	\$ -	\$ -	\$ -	\$ -
Improvement due to Direct Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
Total Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
(Less) Total Project Costs	\$ -	\$ -	\$ -	\$ -	\$ -
Improvement due to Total Benefits	\$ -	\$ -	\$ -	\$ -	\$ -
Financial Return Calculations					
ROI	XXX%	XXX%			
IRR	XXX%	XXX%			
NPV	\$	\$			
Benefit to Cost	X	X			
Payback Time	X months	X months			

Figure 2: Health Catalyst Clinical Improvement Financial Tool

REVENUE OPPORTUNITIES

Shared Savings: Increase revenue through negotiation with payer

After using its EDW to analyze total resources consumed, variation in care and cultural readiness, [North Memorial Health Care](#) identified elective deliveries occurring prior to 39 weeks of gestation as the care process with the greatest opportunity for improvement and financial return. OB studies show these early-term, elective deliveries increase the risk of newborn respiratory distress as well as increase the rates of C-sections. Further incentive for focusing on early-term deliveries came from a payer partner that agreed to pay a bonus in return for North Memorial lowering its rate of pre-39-week deliveries by half, from 1.2 percent of all deliveries to 0.6 percent. A cross-functional outcomes-improvement team used the EDW to analyze workflow issues and performance measures, then deployed a new EMR workflow for nurses to use in approving and scheduling the early-term deliveries.

RESULTS:

- 75 percent reduction in rate of elective early-term deliveries in first six months
- Elective early-term surgeries fell from 1.2 percent to just 0.3 percent
- Bonus payment from payer for exceeding target reduction rate

Identify all revenue opportunities. Revenue opportunities include such financial benefits as higher market share and patient volume, an increase in contract compliance, reduction in bad debt, reduction in accounts receivable (AR) days and improved scores for value-based payment. North Memorial Health Care in the Minneapolis-St. Paul area used its EDW and associated analytics to increase charge capture for professional services, and to earn a significant payer bonus (see *Revenue Opportunities for details*).

Document assumptions. In any project, there are things you do not know. It is impractical to wait until everything is a known fact before work on the project starts. In order to start work, it is necessary to form some assumptions – statements about what you believe to be the case – to create a position from which to begin. These will be proved or disproved as you work on the project. Here is an example of documenting assumptions: Currently six nurses perform a specific task. By automating the workflow, you assume that you can reduce the time required to 0.5 of an FTE. In documenting the assumption, you may want to outline a scale of such reductions over time.

Perform a sensitivity analysis. A sensitivity analysis is a technique used to determine how different values of an independent variable will impact a particular dependent variable under a given set of assumptions. Brokers use sensitivity analysis to estimate the impact of higher interest rates on bond prices, for instance. The analysis should estimate the dollar impact of every piece of measurable progress made in the proposed project. For example, for every 1 percent reduction in overtime, an organization may estimate that it would save \$50,000.

Identify risks and alternatives. No investment analysis would be complete without a frank assessment of the risks involved. Be sure to outline these as thoroughly as possible. An example of a common risk is organizational readiness. Is the finance team, for instance, ready to work with a partner, to share data with physicians, and involve them in making decisions leading to meaningful change? Another common risk is lack of sustainability – organizations may not monitor the effect of changes and adjust accordingly to ensure sustained improvement. Be prepared with alternatives to address these risks.

HEALTH CATALYST STEP THREE: RECRUIT AND TRAIN, PLAN AND IMPLEMENT

Once the project has been approved, planning and implementation can begin. This step involves everything from selecting front-line leaders to communicating progress to the C-suite.

Establish multi-disciplinary outcomes-improvement teams. The first priority is to build an outcomes-improvement team to focus on the specific clinical or operational improvement project. The teams must include representatives from, at a minimum, clinical, quality, IT, finance and operations. The value of a multi-disciplinary team can be illustrated with the example of an outcomes-improvement team working on reducing the rate of hospital-acquired infections. While the clinical team member may be focused on infection surveillance and reducing reporting

SAMPLE AIM STATEMENT

To achieve and sustain a 30 percent reduction in the 30-day and a 15 percent reduction in 90-day all-cause readmission rates for patients with heart failure by December 2014, and sustained reduction in readmission rates through 2016.

SAMPLE SUCCESS METRICS:

- Readmission rates: 30-day and 90-day
- Balance measures: ED visits and observation stay
- Intervention compliance rates (e.g., medication reconciliation, follow-up phone calls...)
- Project costs (e.g., resources, travel, healthcare care analytic apps ...)
- Opportunity costs (e.g., not having a reduction in Medicare reimbursements ...)
- Direct benefits: productivity (e.g., previous manual data pulls...); waste reduction (e.g., length of stay...)
- Indirect benefits (e.g., patient satisfaction...)
- Long term project ROI

hours, the intervention also is also likely to impact LOS. A finance team member could help calculate LOS and costing data from the intervention.

To ensure improvements are sustainable over time, these teams should be permanent, with members committed to improving a specific area of care, such as heart failure or asthma, monitoring the results and adjusting the interventions as needed to maximize the benefit.

Agree on business objectives and an Aim statement. An Aim statement is a written, measurable, and time-sensitive description of the accomplishments the team expects to make from its improvement efforts. The objectives and the Aim must be highly specific and include clearly defined success measures (see *Sample Aim Statement*).

Agree on ROI measures. In addition to the measures themselves, the team must agree on how they will be collected and/or calculated. For example, if a team is focused on reducing hospital-acquired infection rates, the clinician(s) will zero in on surveillance, while finance team members can help with LOS and costing data calculations.

Provide timely executive updates. Consistent communication of project milestones is essential to ensure the project's long-term success. Monthly executive accountability reports help keep the project on track and establish a precedent for future communications. The [Health Catalyst Executive Communication Tool](#) shown in Figure 3 provides a one-page summary that tracks the project's key success and financial metrics, as well as project milestones. It is an easy way to quickly and graphically communicate project progress and identify any logjams.

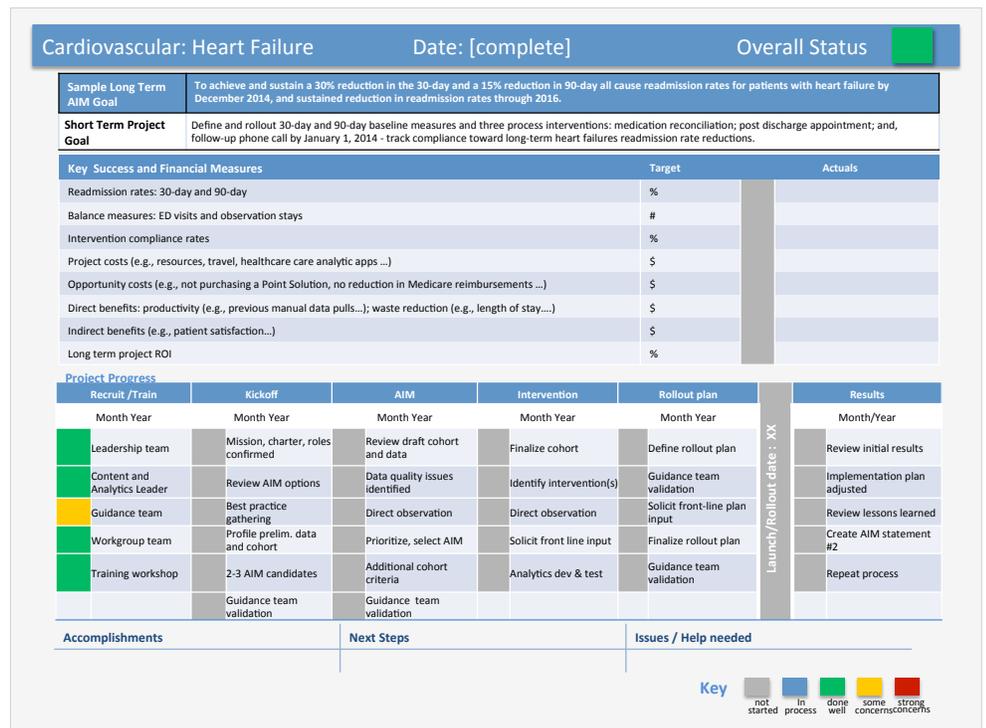


Figure 3: Health Catalyst Executive Communications Tool

Consistent communication of project milestones is essential to ensure the project's long-term success. Monthly executive accountability reports help keep the project on track and establish a precedent for future communications.

HEALTH CATALYST STEP FOUR: EVALUATE COSTS, REVENUE AND DIRECT BENEFITS

The first three steps in the process helped to clarify the design of the improvement project, estimate its benefits, win approval, and deploy its interventions. Now, the final step is to systematically measure the project's *actual* costs, revenue and direct benefits, with the goal of attaining a holistic view of its value and tracking its progress. Finance, working with the multidisciplinary team, calculates the actual costs, benefit, revenues and the project ROI using the Health Catalyst Clinical Improvement Financial Tool. A sample clinical improvement project using the Health Catalyst tool for heart failure readmissions is shown in figure 4.

Clinical Improvement Financial Tool: Heart Failure

Financial Analysis

Project Cost Components	Initial	Year 1	Year 2	Year 3	Year 4
Clinical specialist	-	173,056	178,248	183,595	189,103
Materials	-	5,000	5,150	5,305	5,464
Other - Specify	-	-	-	-	-
Total Non IT Project Costs	\$ -	\$ 178,056	\$ 183,398	\$ 188,900	\$ 194,567
IT Cost Components					
EDW Core	\$ 40,000	\$ -	\$ -	\$ -	\$ -
Analytical Applications					
Advanced Healthcare Apps	-	400,000	-	-	-
Annual Maintenance and Support	-	-	65,000	65,000	65,000
Total IT	\$ 40,000	\$ 400,000	\$ 65,000	\$ 65,000	\$ 65,000
Total Costs	\$ 40,000	\$ 578,056	\$ 248,398	\$ 253,900	\$ 259,567
Opportunity or Indirect Benefits/Savings					
Indirect Benefits					
Cost avoidance-software purchase	-	500,000	-	-	-
Other-maintenance	-	-	85,000	85,000	85,000
Other-ongoing	-	-	-	-	-
Total Indirect Benefits	\$ -	\$ 500,000	\$ 85,000	\$ 85,000	\$ 85,000
Direct Benefits/Savings					
Efficiency					
Nurse redeployment	\$ -	\$ 346,112	\$ 356,495	\$ 367,190	\$ 378,206
Clinical Improvement/Waste Reduction					
Reduction in readmits	-	408,000	420,240	432,847	445,833
Reduction in LOS	-	-	-	-	-
Total Direct Benefits	\$ -	\$ 754,112	\$ 776,735	\$ 800,037	\$ 824,039
Total Benefits	\$ -	\$ 1,254,112	\$ 861,735	\$ 885,037	\$ 909,039
Total Direct Benefits	\$ -	\$ 754,112	\$ 776,735	\$ 800,037	\$ 824,039
(Less) Total Project Costs	(40,000)	(578,056)	(248,398)	(253,900)	(259,567)
Improvement due to Direct Benefits	\$ (40,000)	\$ 176,056	\$ 528,338	\$ 546,138	\$ 564,472
Total Benefits	\$ -	\$ 1,254,112	\$ 861,735	\$ 885,037	\$ 909,039
(Less) Total Project Costs	(40,000)	(578,056)	(248,398)	(253,900)	(259,567)
Improvement due to Total Benefits	\$ (40,000)	\$ 676,056	\$ 613,338	\$ 631,138	\$ 649,472

Financial Return Calculations

	Direct Benefits	All Benefits
ROI	108%	168%
IRR	568%	1681%
NPV	\$1,753,242	\$2,288,383
Benefit to Cost	2.0	2.6
Payback Timing	9.8 months	5.9 months

Figure 4: Health Catalyst Clinical Financial Tool, Heart Failure Readmission Example

Identify all project costs. This is a virtual repeat of the first part of Step Two but with one crucial difference: now the costs are actuals rather than estimates. You will want to review all of the costs identified in that earlier step and add any additional categories that contributed to the total cost of the project.

LESSONS LEARNED FROM HIMSS DAVIES AWARD WINNERS

The annual Nicholas E. Davies award from HIMSS is one of healthcare's most respected awards honoring organizations that document significant return on investment from HIT implementations. Previous winners of the award identified best practices in documenting ROI, including the following:

- Measure the hard ROI, document the soft ROI
- Push departments to focus on ROI, document changes and embrace process change
- Build clinical champions to document and show outcomes
- Continuously report to leadership on outcomes
- Establish baseline and metrics prior to interventions
- Obtain operational buy-in; it can be difficult to get the time and motivation to collect data needed for ROI after the fact

Ensure nothing else has changed. Even if the interventions deployed by the outcomes-improvement team have succeeded, you cannot be certain that the result is positive for the organization until all related factors are analyzed. For example, readmission rates may have decreased for heart failure patients, but the organization may be spending more on emergency department (ED) services and observation usage. A holistic approach to evaluating the program's success includes measuring every related element of clinical operations.

Perform Financial ROI calculations. Now that the project has been in place for some time, you can review and calculate the actuals for all of the categories of cost and benefit in the Clinical Improvement Financial Tool. Continue to use the tool to measure and compare ROI over the long term at set, regular intervals.

Review ROI calculations with the team. Now that you have actual ROI results, it is critical to review them with the multi-disciplinary team to obtain buy-in and hopefully to generate additional insights.

Make adjustments. As the project progresses, it is important to make adjustments that reflect lessons learned. You will want to adjust the project as needed to maximize benefits and reduce costs.

Monitor and ensure sustained results. This final step is critical. Any change to a process is only successful in the long run if the stakeholders truly adopt and sustain the change. Process and technology improvements in healthcare require constant monitoring to ensure the behavior changes are sustained. Regular communication of progress using the Health Catalyst Executive Communication Tool is an excellent way to monitor and sustain the change. And remember to communicate and celebrate project milestones. A key component of sustaining change is the recognition and reward of contributors and the celebration of successes.

HEALTHCARE ROI AND THE DATA-DRIVEN CULTURE

Change is inevitable in every industry. But in healthcare, the pace of change seems to be continually accelerating, driven by regulatory flux and the unceasing evolution of technology. Staying on top of these industry transformations is a constant challenge. The approach outlined in this report will help you get started.

As the model outlines, achieving ROI from IT-supported outcomes-improvement projects requires a multidisciplinary, collaborative approach. If the process outlined here is consistently applied across the organization, it will inevitably nurture a new organizational mindset. Call it the data-driven culture of continuous process improvement: when operational and financial teams are engaged in outcomes-improvement with clinicians and IT analysts, the resulting operational focus helps to narrow the targets of improvement and refine ROI measurements. This constant refinement process spawns ever-more precise and meaningful improvement projects, driving greater overall return on investment. When internalized by enough people, this data-driven culture of continuous measurement triggers a positive feedback loop that can transform a department, an organization and an industry. 🌟

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Bobbi Brown, Vice President of Financial Engagement, Health Catalyst

Bobbi Brown joined Health Catalyst in July 2012 as a Vice President of Financial Engagement. Ms. Brown started her healthcare career with software sales and service at McKesson in the Technology Solutions Group. She worked at Intermountain Healthcare before moving to Sutter Health and, later, Kaiser Permanente, where she served as Vice President of Financial Planning and Performance. At Intermountain Health Care, she partnered with clinical teams to analyze and measure financial impact of the clinical programs.

Ms. Brown holds an MBA from the Thunderbird School of Global Management as well as a BA in Spanish and Education from Misericordia University. She regularly writes and teaches on finance-related healthcare topics including value-based purchasing, payer-provider collaboration, revenue cycle management and performance management. She has served on various boards including Community Health Centers, YMCA, and Very Special Arts.



Leslie Hough Falk, RN, MBA, PMP, Health Catalyst

Leslie Hough Falk joined Health Catalyst in September 2012. Ms. Falk started her career as an RN for the first Pediatric ICU in the state of Nevada. She worked as a Clinical Engineer for Kaiser Permanente-Northern Region- and later as a Director of Biomedical Engineering. Leslie worked for Hewlett-Packard in clinical, marketing, sales and support leadership roles.

Ms. Falk holds an M.S. in Community Counseling from Seattle Pacific University as well as an MBA and B.S. Engineering from the University of Nevada, Las Vegas. Leslie has also earned certifications as a Project Management Professional (PMP), Lean Green Belt and Information Privacy Professional (CIPP/CIPP IT). She volunteers as an RN.



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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3165 East Millrock Drive, Suite 400
Salt Lake City, Utah 84121
ph. 800-309-6800