A major reason performance improvement efforts fail to produce desired results is that organizations often mistakenly think of performance improvement as a series of one-off projects; each with its own beginning, middle, and end.

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Healthcare organizations routinely pursue performance improvement initiatives to improve clinical outcomes and patient experiences, and reduce organizational costs. If these efforts are not well executed, however, they can become black holes that suck up time, money, and resources while yielding little in the way of real, sustainable improvements.

A major reason performance improvement efforts fail to produce desired results is that organizations often mistakenly think of performance improvement as a series of one-off projects; each with its own beginning, middle, and end. To be effective and sustainable, an organization’s performance improvement initiatives should all be conceived and performed in the context of an ongoing performance program.

The initial goals for such a program should be prioritizing performance improvement efforts so that the organization can achieve early successes, and building momentum for future performance improvement efforts. Health Catalyst® recommends a framework known as the Three System Approach for performance improvement:

- Improving measurement and analytics (an analytics system)
- Creating permanent cross-functional workgroup teams focused on identifying, deploying, and monitoring the effectiveness of quality improvements (a deployment system)
- Deploying a data-driven approach to implementing evidence-based best practices (a content system)
Six Steps to Implementing a Performance Improvement Program

Step 1: Integrate Performance Improvement into Your Strategic Objectives

Healthcare is a complex, adaptive system where interactions and relationships of different components simultaneously affect and are shaped by the system. As such, it is important for performance improvement to be integrated within the healthcare organization’s strategic objectives. Strategic objectives such as becoming an accountable care organization (ACO), focusing on population health management, or developing a cardiovascular center of excellence, all require performance improvement in order to be successful. Integrating performance improvement also helps avoid wasting time, effort, and money on programs that may yield little overall benefit.

Step 2: Use Analytics to Unlock Data and Identify Areas of Opportunity

Performance improvement requires an analytics system that integrates the organization’s data sources (clinical, claims, financial, operational, etc.), and facilitates quick and easy data sharing. Only with appropriate analytics can an organization identify specific areas of opportunity among strategic areas of focus.

Healthcare data analytics is required for any sustainable performance improvement initiative; it forms the foundation of discussion and informs decisions. Yet while healthcare organizations have mountains of clinical, claims, financial, operational, patient experience, and other data, most of it is locked away in point solutions built for a specific purpose.

Performance improvement requires an analytic system that integrates the organization’s data sources, quickly and easily unlocks data, and enables effective data sharing and the addition of new data sources. Doing so allows interdisciplinary teams to analyze the data and discover patterns that lead to insights. This should be an Agile, interactive process that produces balanced metrics. Health Catalyst offers a unique solution with our Late-Binding™ Enterprise Data Warehouse.

The analytic system also needs to be able to scale over time to enable different levels of healthcare analytics. As an organization moves up the hierarchy of the Analytics Adoption Model (see Figure 1), data is used as an advantage and strength, helping the organization compete more effectively.
The starting point (Level 1) for sustainable performance improvement is an enterprise data warehouse (EDW) that can aggregate and store data from fragmented point solutions in one place, and make it available to interdisciplinary teams.

Level 2 in the model includes a standardized vocabulary and patient registries. Having a master vocabulary is critical for sharing data. Registries allow the organization to define the cohort of patients for a specific performance improvement program. Using pre-defined patient registries and starter set measures to evaluate key metrics such as: financials, length of stay, and readmissions provides a basis for initiating improvement projects.

Such was the experience of Texas Children’s Hospital in Houston. Before deploying an enterprise-wide late binding EDW and healthcare analytics, the hospital required roughly six months to develop a clinical improvement initiative. Having a healthcare EDW in place reduced this time by half because the data was available and already integrated across the different clinical, operational, and financial systems. Implementing an analytics application that included patient registries and a starter set of common metrics further reduced the time required to just two weeks. The patient population (cohorts) were already defined (ICD codes, APR DRGs, clinical data, etc.), and the teams could easily compare data (admissions, readmissions, LOS, etc.) across the different patient cohorts to help identify the greatest opportunities.
In addition to speeding the development of performance improvement programs, an analytics application can help an organization identify priorities for improvement efforts by uncovering variation. Variation points to a potential for standardizing processes. Variation inherently means some care practices are more efficient and produce higher-quality outcomes than others, and there is a greater likelihood that some practices are not achieving optimum outcomes. Hospitals and health systems will have a significant opportunity for care improvement if they can identify their highest-performing practices and begin to make those practices and evidence-based practices the standards for all caregivers.

The Anatomy of Healthcare Delivery framework developed by David A. Burton, MD (Figure 2) demonstrates the potential pathways patients can take in their interactions with the delivery system. It is a conceptual framework that enables one to organize their thinking about the care delivery process and focus their attention on key processes and decision-making points. The degree to which an organization standardizes their approach in each of the knowledge asset categories (indicated by the orange and blue boxes shown in the diagram) will impact the degree of variation in care delivery.

Figure 2: Anatomy of Healthcare Delivery framework
Once an organization examines how patients flow through the care delivery system and its critical decision points, they can use the information to create a logical framework to organize a Clinical Integration hierarchy (Figure 3). The Clinical Integration hierarchy organizes clinical programs based on physician specialists and other clinicians who share management of care processes and are responsible for the ordering of care for patients — versus traditional service lines used primarily for marketing purposes. The teams either work on things together or one team’s output is another team’s input (e.g., OB-GYN sub-specialists and neonatologists).

**Clinical Integration hierarchy**

**Clinical Programs – ordering of care**

With clinical programs and clinical support services broken into categories that align with the way care is delivered, an organization can use a Pareto approach (also known as the 80/20 rule), to identify their highest opportunities: clinical programs with the highest count, highest cost, or highest variation. One can review the ranking to see which key clinical care processes make up the majority of the care provided.
Variation in cost can be a good surrogate for quality of care because higher cost may result from delivery of inefficient or unnecessary services. As the prescribers of care, clinicians are one of the greatest influencers in managing variable cost, which represents direct cost in departments. By focusing on variable cost—looking at the volume of procedures and cost per procedure, in particular—they can identify avoidable cost and begin working with clinicians, using evidence-based practices, to address them.

The Health Catalyst Key Process Analysis application is based on the Pareto principle, and is used to prioritize performance improvement efforts. Cost is displayed on the x-axis (Figure 4); the y-axis shows the variation in resources consumed. Clinical programs with the highest cost and variation are in box one. Septicemia is one care process that shows both high cost and high variation.

Data governance is also a key component of the analytic strategy. A data governance committee should be responsible for understanding and implementing local data standards (facility codes, department codes, etc.), as well as regional and industry standards (CPT, ICD, SNOMED, LOINC, etc.). In addition to coded data standards, the
committee is also involved in the standard use of algorithms to bind data into analytic algorithms that should be consistently used throughout the organization, such as calculating length of stay, defining readmission criteria, defining patient cohorts, and attributing patients to providers in accountable care arrangements.

**Step 3: Prioritize programs using a combination of analytics and a deployment system**

Successfully improving clinical outcomes and streamlining operations requires a strong organizational commitment, and changes in culture, organizational structure, staff education, and workflow processes—what Health Catalyst calls a deployment system. Any organization that embarks on this performance improvement journey should first assess its readiness for change. Examples of criteria evaluated in an organizational readiness assessment include clinical leadership readiness, data availability, shared vision, and administrative support (e.g., data manager, outcomes analyst availability).

A readiness assessment helps the organization determine how ready its teams are to accept change, and estimate the impact on staff, including front-line care givers. Understanding the strategic objectives and integrating results from a readiness assessment, along with the analytics, help the organization prioritize which care families (clinical services) to begin with.

**Step 4: Define the Performance Improvement Program’s Permanent Teams**

The organization needs permanent performance improvement teams to review and analyze data, define evidence-based and best practices, and monitor ongoing results. Improvement teams should be created to coincide with an organization’s internal structure. One way to organize teams is described below and shown in Figure 5.

**Guidance team.** A guidance team should be assigned accountability for clinical quality across the continuum of care in a specific domain (such as Women and Children). The primary role of this team is to select goals, prioritize work, allocate resources, and remove barriers. The team should then delegate accountability to clinical improvement teams to improve care.
Clinical improvement teams. These teams are typically led by a physician and nurse, and consist of front-line staff who understand the processes targeted for improvement. Their role is to define workgroup outputs and lead the implementation of process improvements. Whenever possible, these teams should represent a broad range of departments, clinics, hospitals, and regions to help disseminate knowledge across the organization. These teams generally create work groups to perform the detailed work.

Work groups. Work groups are generally led by a physician and nurse subject matter expert, and include content, analytics, and technical experts. These teams meet frequently to analyze processes and data, and look for trends and improvements. Their role is to develop Aim Statements, identify interventions, draft knowledge assets (e.g., order sets, patient safety protocols, etc.), define the analytic system, and provide ongoing feedback on the status of care process improvement initiatives.
Step 5: Use a content system to define program outcomes and define interventions

Workgroups are responsible for developing Aim Statements (part of the content system) that establish clear clinical improvement goals and integrate evidence-based practices into standardize care. For examples of Aim Statements based on evidence-based practice that relate to heart failure, see Sample Work Group Aim Statements: Heart Failure.

The focus of performance improvement initiatives for many organizations tends to be on low-performance outliers—that is, on identifying instances where costs are much higher and outcomes substantially poorer than averages among caregivers. However, a more effective approach is to identify those practices that consistently lead to the best outcomes and promote them, using evidence-based guidelines, to improve outcomes across the board, as illustrated in Figure 6.

Figure 6: Approach to improvement: focus on better care

![Figure 6: Approach to improvement: focus on better care](image-url)
The analytics platform described earlier can also be used to identify and eliminate waste that can be an outgrowth of non-adherence to evidence-based practices. This type of waste tends to fall into one of three categories:

**Ordering waste.** This waste results from providers ordering tests, care, and supplies that do not add value. An example of such waste might be the ordering of unnecessary chest X-rays for patients with asthma because of a faulty order set; something Texas Children’s Hospital discovered and addressed in their process improvement programs.

**Workflow waste.** This waste results from inefficiencies in delivering tests, care, and procedures. For example, charge nurses at some healthcare organizations still manually fax a nightly list of patients with urinary catheters and central lines to their infection prevention team. This is an untenable manual process, especially as agencies, such as the Centers for Medicare and Medicaid Services (CMS), expand their surveillance activities to an enterprise-wide focus, rather than critical-care focus.

Several hospitals have been able to reduce their catheter-associated urinary tract infection (CAUTI) and central-line associated bloodstream infections (CLABSI) surveillance activities by as much as 50 to 90 percent through the use of an analytic platform that automatically identifies the patient population and integrates an electronic surveillance algorithm. The algorithm allows nurses to focus more on infection prevention versus manual reporting.

**Defect waste.** If delivery of tests, care, and procedures is defective, the resulting waste could lead not only to higher costs but also patient harm. Inpatient fall prevention is an example of a defect deemed avoidable. Falls can result in injuries, incur additional treatment costs, and require the patient to have an increased LOS.

**Step 6: Estimate the ROI**

As the guidance team sets priorities for performance improvement, they should also take time to estimate the potential ROI for each initiative based on available information. The team can start by identifying organizational costs and estimating benefits using industry benchmarks for similar projects, vendor case studies, and internal estimates. Most organizations will need to educate their clinicians and operations and finance departments on the value of sharing data and working together on inter-disciplinary teams, rather than operating in silos.
Next, the team should identify direct benefits and savings, either from enhanced efficiency and productivity or clinical improvement and waste reduction. Then, the team can identify indirect benefits, such as a reduction in future infections or an improvement in patient satisfaction.

The team should also consider revenue opportunities such as higher market share and patient volume, an increase in contract compliance, or a reduction of bad debt. A revenue opportunity example might be a payer who is willing to pay an organization a bonus for reducing unnecessary pre-term deliveries. Another revenue opportunity example is reducing the number of referrals outside of the healthcare network.

**Building the Framework**

Creating a foundation for sustainable improvement and prioritizing initiatives does not have to be overwhelming. By following these steps and establishing a framework for performance improvement based on analytics, the right teams, and evidence-based practices, an organization can obtain the right tools to achieve and sustain performance improvement.

**Resources**


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Health Catalyst is a mission-driven data warehousing, analytics, and outcomes improvement company that helps healthcare organizations of all sizes perform the clinical, financial, and operational reporting and analysis needed for population health and accountable care. Our proven enterprise data warehouse (EDW) and analytics platform helps improve quality, add efficiency and lower costs in support of more than 50 million patients for organizations ranging from the largest US health system to forward-thinking physician practices.

For more information, visit www.healthcatalyst.com, and follow us on Twitter, LinkedIn, and Facebook.

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