HealthCatalyst
ignite outcomes improvement

Improving Healthcare Performance through Analytics and Cultural Transformation: One Healthcare Organization's Journey

OSF® HealthCare

HEALTHCARE ORGANIZATION

Accountable Care Organization

TOP RESULTS

❯ $9-12 million in performance improvement/cost avoidance over 3 years

❯ 60 percent faster access to clinical and operational data across the enterprise

❯ Clinical performance improvements driven by multidisciplinary teams

❯ A data-empowered culture of transparency and collaboration

PRODUCTS

❯ Late-Binding™ Data Warehouse

❯ Analytics applications

SERVICES

❯ Installation Services

❯ Clinical Implementation Services

Industry experts recognize that developing an effective enterprise data warehouse (EDW) should be a top priority for health systems today.[1] An EDW is critical because using analytics to derive insights from data will be a key factor in health systems' success over the coming decade.

But implementing an effective EDW can be as difficult as it is important. One practice that has hampered EDW deployments in the past is to think too narrowly, and to treat the EDW like an IT project rather than an asset that can help drive both cultural change and clinical and financial improvement across the enterprise. To get value from an EDW, health system leaders must champion the new system, assume accountability for its success, and create from the outset concrete goals for using the EDW to drive improvement.

OSF HealthCare, an organization with 11 hospitals and 108 locations serving nearly 700,000 people in Illinois and Michigan, is an example of an organization that is doing just that. As a Pioneer ACO (accountable care organization), OSF needed to deliver superior clinical outcomes, improve the patient experience, and enhance the affordability and sustainability of its services. Analyzing data in search of valuable clinical and business insights is an important part of the organization's long-range strategy for achieving these goals.

> " The essential factor for showing the value of the EDW was to create a practical business intelligence solution fueled by EDW data—and to do so quickly. It's not only about bringing data together but also ensuring that the data is digestible and usable. We chose to deploy a dashboard that provides performance scorecards across the entire health system. The quick value and transparency we realized from the dashboard helped us greenlight additional improvement projects. "
>
> Roopa Foulger
> Executive Director
> Data Delivery

THE IMPORTANCE OF ANALYTICS IN ACHIEVING STRATEGIC GOALS

For several years OSF's leaders had prioritized analytics as a key component of their strategic plan, but they had yet to find an effective system for using data to consistently deliver greater value to patients and stakeholders. The ACO was, in fact, experiencing data overload, combined with a lack of actionable information. Its existing measurement and reporting system didn't adequately help leaders determine whether they were measuring the right things, whether they could improve performance with adequate speed and effectiveness, or whether they were successfully creating a culture of transparency and clinical excellence.

OSF's leaders recognized that to effectively achieve their goals, they needed to reinvent the organization's performance improvement measurement and reporting system for both operations and clinical care. Such reinvention would require a highly integrated and functional EDW that could support interactive access to useful information.

The organization already had two unsuccessful attempts at implementing an EDW under its belt—failures largely attributed to treating the development of the EDW as a siloed IT project. This history meant that leaders would have to overcome skepticism in the organization about the effectiveness of EDWs. In order for this new effort to be seen as a success, leaders knew they would need to:

- ❯ Ensure executive leadership support across the organization— business, operational, clinical, and business intelligence.
- ❯ Assemble a project team with the right technical capabilities supported by engagement system-wide
- ❯ Achieve rapid implementation of the EDW, derive actionable insights from it, and demonstrate value in operational, financial, and clinical areas

Rather than just deploy new analytics technology, OSF needed to drive a cultural shift throughout the organization to embrace becoming a data-empowered system.

A SOLUTION FOR DRIVING PERFORMANCE IMPROVEMENT IN HEALTHCARE

OSF's successful solution to these challenges began with the implementation of a late-binding EDW from Health Catalyst. This EDW aggregates clinical, claims, financial, and other data to create a consistent view of the ACO's data—a single source of truth to inform decisions. The EDW served as an important foundation of useful, timely, and accessible information for stakeholders throughout the organization to guide improvement efforts.

> "Building an EDW is an iterative process—you set achievable goals one stage at a time and then build on those successes. An EDW is not a one-stop shop right out of the gate, but it will ultimately produce very powerful business and clinical intelligence.

Mark Hohulin
Senior Vice President
Healthcare Analytics

FIGURE 1: SAMPLE EXECUTIVE DASHBOARD

1. Ability to filter by summary data or individual performance area
2. Integrated clinical, quality, and operational information
3. Baseline, current, and target performance measures
4. Data sets by facility and region
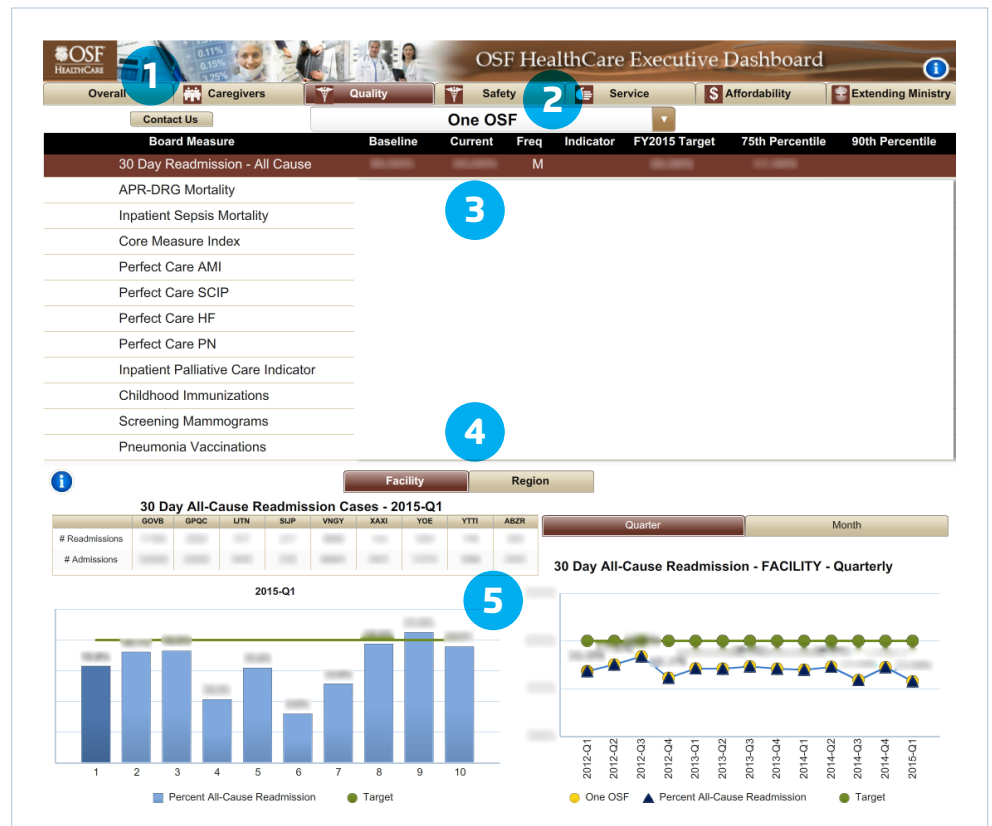5. Trended actual performance relative to target performance

However, as OSF leaders had learned through experience, technology accounts for just 30 percent of a successful EDW implementation; the remaining 70 percent consists of solid execution and aligning the analytics strategy with the organization's business goals. A successful implementation would require both clinical and business buy-in. Determined not to repeat past mistakes, they guided their plan by what they had learned: To successfully implement an analytics strategy it is necessary to know (and `agree on) what you are going to do with the data to get the results you want. Consequently, they determined that the organization's top priorities upon implementing the EDW were to:

1. Provide tools and transparency to engage leadership

To encourage the ongoing engagement of leadership and ensure organizational alignment with the overall strategic plan, the OSF team rolled out an Executive Dashboard, enabled by the EDW (see Figure 1). The Executive Dashboard provides transparency across the organization to leaders and staff around performance measurements and outcomes. It also serves as the source of truth for aligning performance—both clinical and operational—to meet the strategic goals of the organization. The dashboard brings value in the form of quick access to data that can identify opportunities for improvement. This, in turn, enables leaders to make data driven decisions to support their improvement teams to accomplish quick implementation of key interventions to improve performance.

Figure 1: Sample Executive Dashboard

The Executive Dashboard provides summary views and trends, as well as drill-down capabilities to filter into greater detail on individual metrics.

2. Form and support improvement teams

Dashboards are only truly effective when used to identify and implement specific interventions to improve performance—with each intervention contributing to the attainment of the overall strategic goals. To make sure that the high-level goals were integrated and aligned from the executive level to the frontline staff, the OSF team:

- Assembled an interdisciplinary team (including business intelligence experts, clinicians, and operations staff) to guide the development and rollout of the EDW.

- Ensured the data was digestible and aligned to the organization's strategic roadmap

- Used data to identify clinical and operational areas of focus that presented the greatest opportunities for quality and cost improvement

- Launched and empowered multidisciplinary improvement teams in these prioritized focus areas to use data, evidence-based best practices, and timely feedback to improve performance and clinical outcomes in strategic service lines.

A prime example of this process in action was the development of the Care Transitions Dashboard (see Figure 2)—developed by a

FIGURE 2: SAMPLE CARE TRANSITIONS DASHBOARD

1 Ability to track performance on clinical interventions with drill-down to the patient level

2 Baseline, current, and target performance measures

3 Data sets by period, date range, and facility
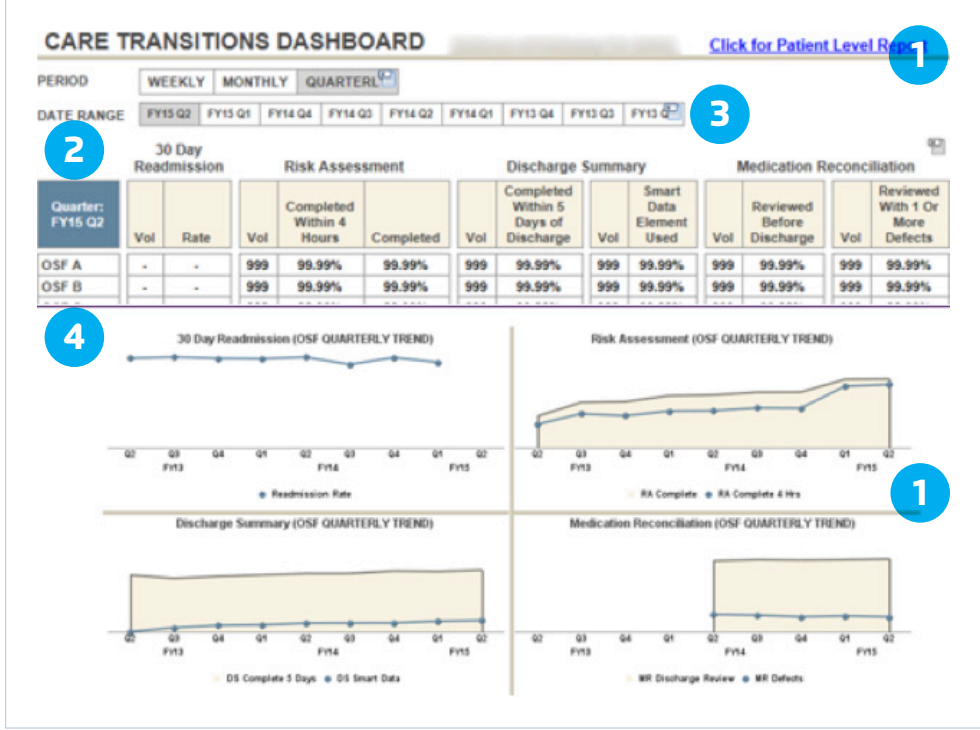
4 Trended actual performance

Figure 2. Sample Care Transitions Dashboard

> "Healthcare is primed for analytics as a means of driving clinical and business success. Analytics can be the key differentiator when it comes to making improvements in so many different areas—from care quality to cost-cutting and waste management."
>
> Roopa Foulger
> Executive Director
> Data Delivery

multidisciplinary team dedicated to improving quality of care. This team analyzed the data in the EDW and reviewed best practices to determine the right interventions for preventing 30-day heart failure (HF) readmissions. They were able to use the Care Transitions Dashboard to trend HF 30 day readmissions and the completion of prescribed interventions—such as risk assessments, discharge summaries, and medication reconciliation. Through this process, they were able to see how the specific interventions affected outcomes.

RESULTS

Within a few months of launching the EDW initiative, OSF began to see value from the new analytics system. This unprecedented time to value was possible because they implemented the late-binding EDW in 90 days, and OSF had developed an organizational culture and structure that was prepared to use the EDW. The unique late-binding architecture enabled the ACO to derive value from the system incrementally. Through careful planning and empowerment of strategically focused improvement teams, they were able to quickly leverage the new technology and tools in the areas where they could have the most impact, and then build on those successes. Today, the cumulative value OSF has realized through this effort is significant—and still growing.

$9-12 million in performance improvement and cost avoidance over 3 years

By engaging leadership, aligning the EDW initiative with business strategies, and building data-driven clinical and operational improvement teams, OSF was able to save $9-12 million over three years. The organization generated the savings through both process improvement and cost avoidance.

60 percent faster access to clinical and operational data across the enterprise

OSF delivered quick, self-service access to data by creating strategic dashboards that run on the EDW. This level of system-wide data access was key to proving the value of the EDW and gaining support for subsequent data-driven projects. Automated data access also drove an 80 percent reduction in customized report requests. This enabled OSF to refocus the efforts of 2.7 FTEs from data gathering to analysis and improvement—an additional benefit of creating a strong analytic system and a culture that values data. (See Figure 3)
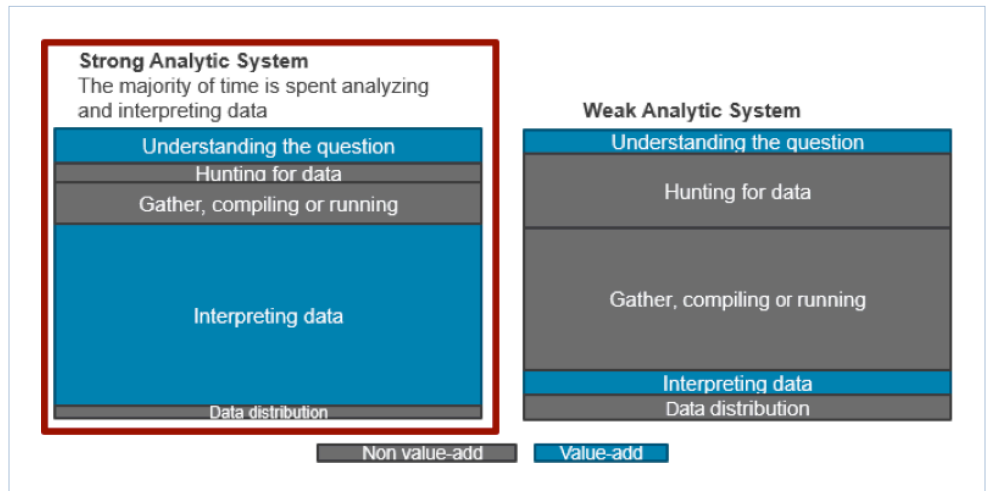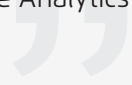
Figure 3. Staff focus in a strong analytic system versus a weak analytic system

Clinical performance improvements driven by multidisciplinary teams

By creating multidisciplinary performance-improvement teams and empowering them with integrated data and analytics, OSF was able to use actionable information to improve patient care. The following are examples of outcomes achieved by improvement teams:

Heart Failure Program

The multidisciplinary heart failure team partnered with OSF's analytics team to pull baseline data from the EDW and develop a heart failure dashboard. Using the dashboard, the team tracked key process and outcome metrics to inform caregivers of where their processes diverged from best practices. OSF heart failure care subsequently improved across three tracked processes:

- 8 percent reduction in unspecified coding
- 15 percent increase in five-day follow-up appointments being made before discharge
- 15 percent improvement in use of patient education best practices

Cardiovascular Physician Dashboard

The multidisciplinary cardiovascular team embarked on an initiative to improve quality by identifying a series of best-practice measures for cardiologists. The team partnered with the OSF analytics team to develop a dashboard that would track these measures and compare physicians' performance against their peers. The two teams worked together throughout the build process to define components and validate data. In just seven months' time, the initiative has resulted in improvements in each tracked measure—and through ongoing focus they anticipate continued improvement.

> Our internal data analytics team worked closely with us to create custom performance dashboards for our emergency departments. Because of this collaboration, our ED staff receive comprehensible and actionable information tailored to their needs, which is the key to effective performance, cost, and utilization management.
>
> Leon Yeh, MD, MBA, FACEP,
> Medical Director
> Emergency Medicine

Palliative Care Program ([view case study](#)*)*

OSF needed an effective method for documenting both advance care planning discussions and the advance care plans themselves. The organization used the EDW and the Instant Data Entry Application (IDEA) from Health Catalyst for data aggregation, risk stratification, documentation, and reporting across its heterogeneous EHR environment to identify high-risk patients. OSF has completed, documented, and aggregated advance care planning for more than 16,000 patients.

A data-empowered culture of transparency and collaboration

With the EDW and new team structures in place, OSF has created a data-empowered culture that will drive all future improvement efforts. This culture enlists the support of leadership as well as identifying owners of each initiative at the outset to ensure accountability and shared goals. In parallel, OSF has more tightly aligned its priorities, quality measures, and action plans with specific improvement goals. The organization ties data to specific interventions, which allows stakeholders throughout the organization to see the value and clinical impact of quality improvement. As individual teams implement best practices and drive progress, they share those practices throughout the organization to drive performance.

WHAT'S NEXT

OSF will continue to develop its data-powered culture of transparency fueled by integrated analytics. It has, in fact, developed a system-wide improvement portfolio that it will tackle incrementally based on quality and cost priorities. Current priorities include population health management, patient safety, and improved care delivery in strategic service lines such as cardiovascular, neurosciences, pediatrics, and oncology.

The organization will also continue to expand its technology capabilities around analytics, including enhancing its ability to monitor and quantify its progress in improving care and operational efficiency. In the near term, OSF seeks to improve clinical decision support by tying EDW information into its EHRs to enable immediate use of data by frontline staff to deliver appropriate care. They plan to expand the effectiveness of their analytics platform by deploying additional applications to support their key strategic priorities. OSF also wants to support their research efforts with academic partners, improve their population and drive business decisions, which will be enabled by expanding their capacity to provide aggregated and de-identified data. ⑂

References

1. Shaffer, V. & Beyer, M. (2014). Top Actions for Healthcare Delivery Organization CIOs, 2014: Avoid 25 Years of Mistakes in Enterprise Data Warehousing. Gartner. doi: 1-1R0QJVG&ct=140221&st=sb

ABOUT HEALTH CATALYST

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.