Denver Health: How a Safety Net System Maximizes Its Value

The Agency for Healthcare Research and Quality (AHRQ) has developed a series of case studies to help health system chief executive officers (CEOs) and other C-suite leaders better understand the concept of a learning health system (LHS) and the value of making investments in transformation. Building this understanding is part of the Agency's ongoing effort to accelerate learning and innovation in healthcare delivery in order to ensure that people across America receive the highest quality, safest, most up-to-date care.

AHRQ defines an LHS as a health system in which internal data and experience are systematically integrated with external evidence, and that knowledge is put into practice. As a result, patients get higher quality, safer, more efficient care, and health delivery organizations become better places to work.

No health system becomes an LHS overnight. Nor is the term "learning health system" widely used yet, even in systems doing this work. As this and other case studies show, becoming an LHS is an iterative journey characterized by strong leadership, effective use of data in the clinical setting, and both a culture and workforce committed to continuous learning and improvement.

Becoming an LHS is also increasingly an imperative in an era of health system transformation. There is growing recognition that "business as usual" is no longer a sustainable model. Driving this change are new Federal and private-sector initiatives to redirect incentives away from volume and toward a focus on value: better patient outcomes and quality at lower costs. This value-based care framework includes providing clinicians with strong, actionable data and tools —and identifying the right performance metrics to hold them and their teams accountable for their patients' care. This framework also includes breaking down silos between medical care and community services to prevent disease before it occurs and rewarding providers and health systems for results and not activities.

As more organizations look at value-based care and pursue their LHS journeys, those that do not rethink how they operate risk being left behind.

For Denver Health, the journey toward a LHS grew out of its long-time commitment to a culture that valued the importance of being able to track, retain, and analyze data in a systematic way. It defines an LHS as one that collects and uses information about itself and its performance to continuously and incrementally innovate and improve patient care over time.

This is Denver Health's LHS story.

Snapshot of the Health System

Denver Health has evolved over more than 150 years from a city hospital into a comprehensive health system serving more than 25 percent of the city's population annually. It operates under the auspices of the Denver Health and Hospital Authority and is a vertically integrated safety net health system that includes a 525-bed hospital, 17 school-based health clinics, 9 family health centers, and the city's 911 emergency response and poison centers. The health system treats more than 210,000 patients each year and has a patient mix that is 25 percent private pay and 75 percent Medicaid, Medicare, dual eligible, or uninsured.

The health system's commitment to being an LHS traces to the early 2000s when Denver Health leaders began a process of system transformation based on the principles of Toyota's Lean methodologies. Lean principles help organizations work to maximize customer value while minimizing waste. In the healthcare context, this means continuously looking for ways to improve patients' experience of care and outcomes as efficiently and effectively as possible.

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—Robin Wittenstein, Ed.D., CEO

Denver Health leaders' commitment to Lean processes has helped to embed a systemwide commitment to being an LHS, according to CEO Robin Wittenstein, Ed.D. "If you improve performance, you improve outcomes," she notes. "From a health system perspective, a patient perspective, or a provider perspective, everyone always wants to do better, right?"

To do better, Denver Health has made and sustained investments in the three core components of an LHS: data, culture, and workforce.

AT A GLANCE

DENVER HEALTH

PATIENTS

210,000
PER YEAR

LOCATIONS

1 525-BED HOSPITAL

1 POISON CENTER

17 SCHOOL-BASED HEALTH CLINICS

1 911 RESPONSE CENTER

9 FAMILY HEALTH CENTERS

PATIENT MIX

25% PRIVATE PAY

75% MEDICAID, MEDICARE DUAL-ELIGIBLE, UNINSURED
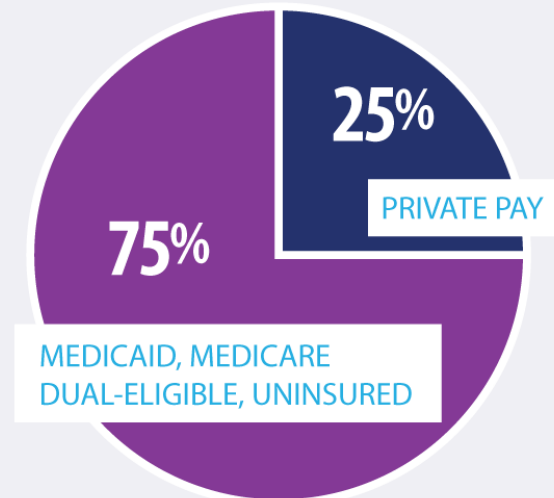
Making Significant Investments in Data Infrastructure

As a safety net system, Denver Health has long recognized that making data-driven, evidence-informed decisions is essential to providing excellent patient care with limited resources. Its investments in infrastructure have been laser focused on giving information to providers to help them help their patients.

Denver Health is in the process of consolidating its data operations. The health system has been using a single electronic health record (EHR) system since 2016 and has invested heavily in using data more prospectively. Instead of looking back a year or even a month, health system leaders are increasingly focusing on data that can be tracked and analyzed in real time.

For example, Denver Health's EHR has been designed to allow its primary care clinics to incorporate reminders for certain cancer screening tests with the clinic's daily appointment schedule. This allows staff to see, at the point of care, which patients are due or overdue for screening tests. Having these data available has improved cancer screening rates, which means that more patients are being provided potentially life-saving preventive services.

Denver Health is also using its data to benchmark its progress in comparison to national standards, leading institutions, and its own performance. In the area of patient safety, for

example, health system leaders looked at various performance metrics and the current science to find opportunities to improve. They have also developed a set of internal quality indicators to track progress and any variances in care.

Denver Health leaders are also thinking about data as a systemwide tool to improve processes and patient outcomes. For example, asking what can be learned when something goes wrong led to the development of a systemwide adverse events database that is shared by all departments and helps shift thinking from finding who might be at fault to preventing similar events from happening again.

Fostering a Culture of Learning

While Denver Health leaders have committed to being data driven, that commitment is rooted in a culture of continuous improvement and respect for their workforce. In addition to adopting Toyota's Lean processes, system leaders have embraced the Lean Kaizen approach that is based on the idea that everyone within the system can contribute to the success of the whole organization by striving to do better.

Denver Health's culture of learning encourages staff to speak up and offer ideas both big and small. As a vertically integrated organization in which all staff members, including physicians, are employees, Denver Health has recognized the need to hire people at all levels who are committed to a culture of continuous improvement.

Data transparency at the individual provider level allows Denver Health to track and share more than 30 metrics on clinical outcomes, productivity, and financial returns. This level of transparency allows individual providers to identify where they can improve and allows system leaders to look across individual reports to identify opportunities to put systemwide quality improvement processes in place.

Another example of how Denver Health has embraced a culture of continuous improvement is the use of Gemba walks. "Gemba," which is a Japanese term denoting "the real place," refers in Toyota Lean organizations to the place where the real work happens. At Denver Health, senior leaders meet and walk around with each community clinic team each month. It's an opportunity for senior leaders to see what's happening in the clinics and for staff to share challenges, talk about what they're working on, and exchange ideas on how to better serve patients.

In addition, Denver Health displays a 4- by 8-foot whiteboard at every clinic that lists all the systemwide and clinic-specific process and quality initiatives in progress at that location. These whiteboards list everything that's being tracked at that clinic—from numbers of patients seen to childhood immunization rates to patient experience scores. The clinic-specific whiteboards are then rolled up into ambulatorywide quality improvement boards to track and measure progress across Denver Health's community health facilities.

Finally, Denver Health has defined another hallmark of a successful culture of learning: recognizing that no one person knows everything. While this may seem obvious, Denver Health leaders believe that all staff members need the discipline to test assumptions and not assume they know what problems need fixing.

For example, Denver Health leaders initially assumed there was a correlation between repeat emergency room visits and long stays. System leaders presumed that patients who visited the emergency room a lot ended up being admitted. However, before initiating efforts to address this perceived problem, they closely examined their data and discovered that their assumption was wrong. They found very little overlap between patients with high emergency room utilization rates and lengthy stays.

"If we really understood the problems as well as we think we do, we'd have solved them by now. You have to be ready to say you're not sure—and then test everything that you're doing and look very critically in the mirror."

—Robin Wittenstein, Ed.D., CEO

Instead, they realized the problem was that a lot of their patients were difficult to discharge due to a lack of resources to care for themselves once they were released. So instead of seeking alternatives to admitting these patients into the hospital, Denver Health devoted resources to finding community partners to help transition patients out of the hospital.

Denver Health went through a similar process to review its data on surgical site infections when leaders noticed the health system's rates were higher than expected. Rather than assuming something was going wrong in surgery, they stepped back and looked at their patient population. What they discovered was that many were in living circumstances where they had no way to follow a set of preoperative instructions. As a result, the health system changed its preoperative procedures to take these patient limitations into account, and surgical infection rates dropped.

Valuing the Role of Staff in Continuous Improvement

Denver Health's embrace of Kaizen manifests not only in its overall culture but also in its approach to its workforce. If everyone in the system has a role to play in its success, then the system has a role in making sure people have the tools and training to be successful.

For example, the health system launched an "administrative residency" to expose managers to other departments and management imperatives across Denver Health. The program gives managers interested in moving up the leadership ladder an opportunity to learn the nuances of managing in different environments and build relationships across departments.

Health system leaders have launched a leadership training program as a pilot program in one division of Denver Health. Everyone in that division who is hired on a leadership track must complete a core curriculum within a year that includes courses in change management, fundamentals of data analytics and insights, and basic Lean processes. The goal is to ensure that future leaders gain the skills they will need so that Denver Health will remain data driven and continuously improving.

"If your institutional knowledge is in the mind of an individual, it leaves when the individual leaves. But if it is brought into systems for sustaining and passing on that knowledge, then the benefits continue."

— Timothy Harlin, Sc.D., Chief Operating and Acceleration Officer

Denver Health leaders also have taken steps to incentivize innovation and rapid improvement. For example, the health system launched the Quality Improvement Review Committee in late 2017 to screen proposals for small-scale projects in the areas of quality improvement, program evaluation, and surveillance. The aim is to identify data-driven opportunities to improve a process or an intervention within the emergency room, a department, or even a division.

In addition, members of an ambulatory Quality Improvement Design Committee review proposals for quality improvement and research initiatives suggested by staff in the community clinic settings. Both committees reinforce the health system's recognition that improvements can happen in big and small ways.

As an LHS, Denver Health continues to explore ways to incentivize its workforce to look for opportunities to improve system processes and patient outcomes. For example, it recently expanded its management incentive plan to include more key managers. Senior leaders have since started to discuss whether and how the management incentive plan could evolve to incorporate more and more of Denver Health's workforce.

Key Takeaways

With its culture of continuous improvement and its investments in data, people, and process, Denver Health is a model for how an LHS can deliver higher quality, safer, and more efficient patient care.

As a safety net system, Denver Health can't afford not to make data-driven and evidence-based choices about what to implement and how. Hence its commitment to Lean processes and to giving clinicians permission to innovate and the tools they need to adapt and change in ways

that create lasting value for patients and the health system. Denver Health measures its return on investment not only on financial stability but also based on improved health outcomes, happy patients, and a happy and engaged workforce.

Finally, being an LHS isn't easy—but it is imperative, according to Chief Operating and Acceleration Officer Timothy Harlin, Sc.D. "If you don't have well-intentioned people showing up every day trying to solve problems and improve the processes in your organization, then a year from now you'll have the same issues and the same problems," he says.