HealthCatalyst
ignite outcomes improvement™

Patient-Centered LOS Reduction Initiative Improves Outcomes, Lowers Costs

El Camino Hospital®
THE HOSPITAL OF SILICON VALLEY

HEALTHCARE ORGANIZATION

Community Hospital

PRODUCTS

- Health Catalyst® Analytics Platform built using the Late-Binding™ Data Warehouse Architecture

SERVICES

- Installation Services

EXECUTIVE SUMMARY

U.S. hospital stays cost the health system at least $377.5 billion per year. In today's value-based care environment, hospitals are under increasing pressure to avoid patient harm and maintain quality while also lowering costs. Reducing hospital length of stay (LOS), especially as it relates to avoiding unnecessary hospital-acquired conditions (HACs), is a primary indicator of a hospital's success in achieving these goals.

El Camino Hospital, a 395-bed multi-specialty community hospital in Mountain View, Calif., places a high priority on keeping patients safe. However, when it came to its goal of reducing LOS, leaders recognized that they faced some major challenges, including:

- The complexity of implementing a multi-layered, multi-disciplinary approach to improving the patient discharge process.
- Identifying what issues were contributing the most to increased LOS so that they could be addressed.

By implementing analytics and protocols that provide access to actionable data, the LOS reduction team was able to identify patients at high risk for increased LOS so that they could develop and track critical interventions. El Camino Hospital's patient-centered approach to tackling LOS reduction also included multi-disciplinary cooperation, leadership buy-in, and additional resources to enhance discharge care coordination.

This innovative, systematic approach resulted in not only a better than anticipated reduction in average LOS (ALOS) of 7.8 percent, but also:

- 14.8 percent reduction in readmissions
- 55 percent reduction in healthcare acquired conditions (HACs)
- 32 percent reduction in incidence of AHRQ patient safety indicators (PSIs).
- $2.2 million projected annual cost savings

> The No. 1 reason for the LOS initiative was to improve quality and outcomes for the patients we serve.
>
> Cheryl Reinking, RN
> Chief Nursing Officer
> ECH

KEEPING PATIENTS SAFE: WHERE LOS FITS IN

El Camino Hospital, a 395-bed multi-specialty community hospital in Mountain View, Calif., places a high priority on keeping patients safe. Leaders of the hospital—which has been recognized with magnet status for nursing excellence by the American Nursing Credentialing Center—recognize the important role that length of stay (LOS) plays in patient safety.

Driven by mounting pressure from both public and private sectors to avoid patient harm and lower costs, reducing LOS had become a top priority not just for El Camino Hospital, but for hospitals and health systems across the nation.[1] With hospital care costs in the United States reaching $377.5 billion per year,[2] addressing length of a hospital stay can positively impact that number. A longer LOS also increases the likelihood of a hospital-acquired condition (HAC), which harms patients and contributes to an even longer and costlier stay.[3]

In addition to improving patient safety and lowering costs, reducing LOS can release capacity in the system (including beds and staff time) and improve throughput, enabling the hospital to serve more patients. And although shorter LOS has been correlated with a significantly higher risk of readmission in multiple studies and countries,[4] the results of El Camino Hospital's improvement efforts demonstrate that these risks can be mitigated as hospitals seek the optimal LOS for maximizing quality and minimizing cost.

While many healthcare organizations are interested in reducing LOS, effecting change can be challenging due to the complex and multi-layered nature of the problem and the many disciplines that need to be involved in the solution. El Camino Hospital leaders knew that in order to be successful, they would need to leverage real-time, targeted analytics to identify obstacles and measure improvements. In addition, a multi-disciplinary approach would be essential to improve the entire discharge process.

ADDRESSING BARRIERS TO REDUCING LENGTH OF STAY IN HOSPITAL

El Camino Hospital recognized that reducing LOS would be a major undertaking due to the complexity and scope of the related issues. The team working on this initiative identified the following challenges and potential barriers and laid out the groundwork to overcome them:

> Accurate, timely, and reliable information is essential to manage LOS effectively.
>
> Petrina Griesbach, RN
> Manager of Clinical Variation and Analytics
> ECH

Alignment and ownership

The team knew that implementing and sustaining LOS-improvement efforts would require ongoing communication, collaboration, and alignment between the hospital and the community, between providers, and with patients and families. As such, everyone in the organization—from the executive team to clinicians on the frontlines of care—would need to embrace and own the initiative. To make this happen, El Camino Hospital needed key leaders within the hospital to recognize and support the importance of reducing LOS.

Data and analytics

Measuring and tracking LOS can be a difficult and complex matter, and El Camino Hospital's historic method of doing so was imprecise. Without timely and actionable data or insights, El Camino Hospital was hampered in its improvement efforts. Team members recognized that their efforts might fail if they weren't able to pinpoint the clinical, operational, and financial factors driving LOS. They needed a way to identify the interventions to focus on that would have the most impact. They also had to ensure that related measures (such as readmissions) would not be negatively affected by their LOS interventions.

Discharge processes

Managing variation in the discharge process and systematically identifying and addressing clinical and operational barriers to a timely discharge were pivotal priorities for El Camino Hospital in its efforts to decrease LOS. El Camino Hospital's team recognized that it had a variable and unpredictable discharge process.

Many factors contributed to the variability in discharge practices. Chief among these was a lack of resources, which hampered discharge planning. Many care coordinators managed too large a patient panel and could not spend enough time with individual patients. Care coordinator coverage did not adequately include all shifts and weekends or the emergency department (ED).

Furthermore, some discharges presented problematic barriers that were difficult for staff to address. Such barriers included:

- Poor availability of skilled nursing facility (SNF) and extended care facility (ECF) beds in the community
- Unpreparedness of family to care for patient
- Lack of further treatment options for a sick patient

> Do not try to boil the ocean. Focus on patients at highest risk of a prolonged hospitalization and focus on their barriers to discharge.
>
> Diane Andersen, RN
> Director of Case Management
> ECH

- Lack of advanced directives
- Absence of necessary equipment and resources (such as special beds or oxygen) at the patient's home

The hospital needed more timely and consistent communication about discharge barriers with providers, families, and the community.

PATIENT-CENTERED FOCUS CRUCIAL TO ACHIEVING SUCCESSFUL OUTCOMES

El Camino Hospital's overarching goal was to reduce LOS while keeping readmissions stable. Its principle motivation for reducing LOS was to improve quality and outcomes for patients. Involving them in care decisions and transitions was a key component of the initiative. Ensuring that patients were the focus of these efforts led El Camino Hospital to make different and better decisions than if it had focused primarily on financial or operational outcomes.

The success of El Camino Hospital's efforts hinged on three components, including leadership and organizational alignment, accurate and accessible data and analytics, and patient-centered operational efforts.

1. Leadership and Organizational Alignment

Reducing LOS required changes in processes and practices; therefore, it was critically important to obtain executive, clinical, and operational engagement prior to launching the project. Maintaining alignment across the C-suite had to be an ongoing and multidisciplinary effort across business, operations, and clinical leaders.

El Camino Hospital's chief medical officer (CMO) and chief nursing officer (CNO) were active champions of the LOS project, which was tied to the many of the organization's strategic goals and objectives. The chief operation officer (COO) added the project to the agenda for the Operations Council, and leaders spoke about their efforts to support the initiative. This kind of high-profile, high-visibility support led to widespread ownership and engagement. In addition, a tactical group, the LOS steering committee, prioritized work, monitored variances, and tracked progress.

2. Accurate and Accessible Data and Analytics

Measuring and managing ALOS is complex because it has multiple dependencies and impacts other metrics. Understanding the underlying dynamics, identifying and targeting key opportunities,

and observing blockages in patient flow requires tracking and understanding of multiple metrics—and they all hinge on access to consistent, accurate data and the ability to drill down into that data.

To gain these capabilities, El Camino Hospital implemented an enterprise data warehouse (EDW) and analytics platform enabling the team to integrate data from numerous source systems, including clinical, billing, cost, and quality.

The analytics applications facilitate the presentation of LOS information in an effective, easy-to-use, and actionable manner (Figure 1).The team specifically found that it was important to get the data to the unit managers so they could use the information in their shift huddles and educate nurses on what their role is in reducing LOS. This approach to data transparency broke everyone out of their silos and led to better communication.

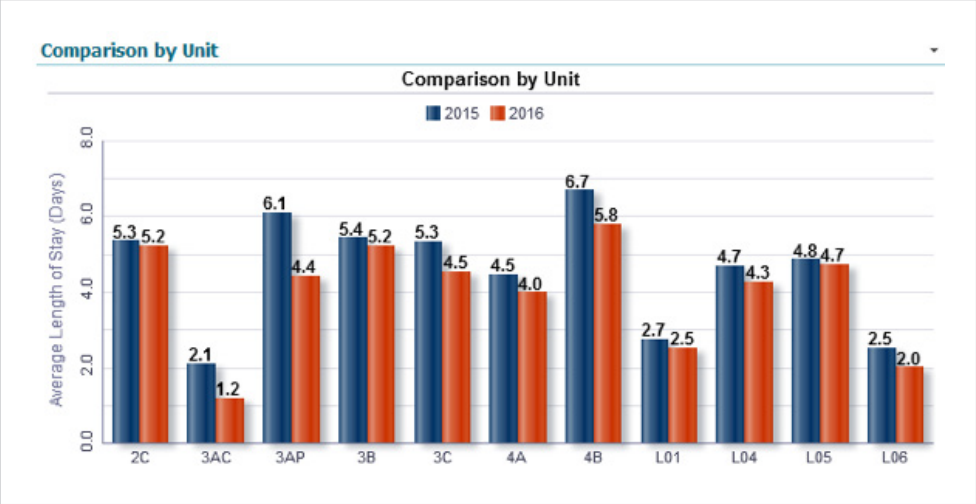

Figure 1. Filters enable drill-down to view ALOS trends by unit

Having timely and actionable data in an easy-to-digest format proved key to the project's success in many other ways. For example, the data allowed for better identification of issues contributing to a long LOS, especially in areas where team members did not realize there was an issue. At the outset, the project focused on all patients and all payers, but as the team delved into the work, the data revealed that two major outliers were contributing to the increased LOS for El Camino Hospital—oncology patients and Medicare patients in the acute and intensive care units (ICUs). Armed with this information, the team began targeting interventions and processes to impact the patients with the biggest opportunities for improvement, while tracking which interventions made the most difference.

El Camino Hospital initially used ALOS as a measure but found it to be too high-level, generic, and delayed to be useful. Team members needed a different metric and wanted the data to show it in a consumable way. Their solution was to create a new, customized way to conceptualize LOS, which they called “days stayed.” This measure looks at total days consumed or used, then focuses on the high-utilization patients responsible for long stays (Figure 2).

"Days stayed" - All payers, Inpatients on units 2C, 3AC, 3AP, 3B, 3C, 4A, 4B
Time run: 5/29/2015 12:37:42 PM

Pivot Table (3)

	Patient Count	Sum of Patient Days Used	Average LOS
LOS			
Grand Total	117	639	5
LOS 20 + days	6	183	31
LOS 7 to 19 days	23	230	10
LOS < 7 days	88	226	3

Figure 2. Sample “Days stayed” summary report

This new way of understanding and visualizing data via “Days stayed” enabled El Camino Hospital to track patients who were deemed dischargeable but who were still in the hospital. They then moved these patients into a virtual SNF (VSNF), which allowed them to track two LOS measurements: one with all patients and another with the VSNF patients excluded. This separation enabled the team to focus LOS improvement efforts to specific patient sets. For example, the data revealed that patients staying longer than 19 days accounted for 42 percent of the total “Days stayed.” Focusing on those more complex patients and their specific barriers to discharge allowed the team to make a significant impact on overall LOS.

3. Operational Patient-Centered Efforts

El Camino Hospital created and followed a thoughtful and thorough action plan as it strove to implement a patient-centered initiative for optimizing LOS. The key actions and systemic process changes that contributed to the success of the LOS reduction program (summarized in Figure 3) included:

- **Making the right resources available.** Ensuring that patients were discharged from the hospital in a safe and timely manner hinged on addressing their clinical, social, and financial needs. El Camino Hospital leveraged data to increase awareness and

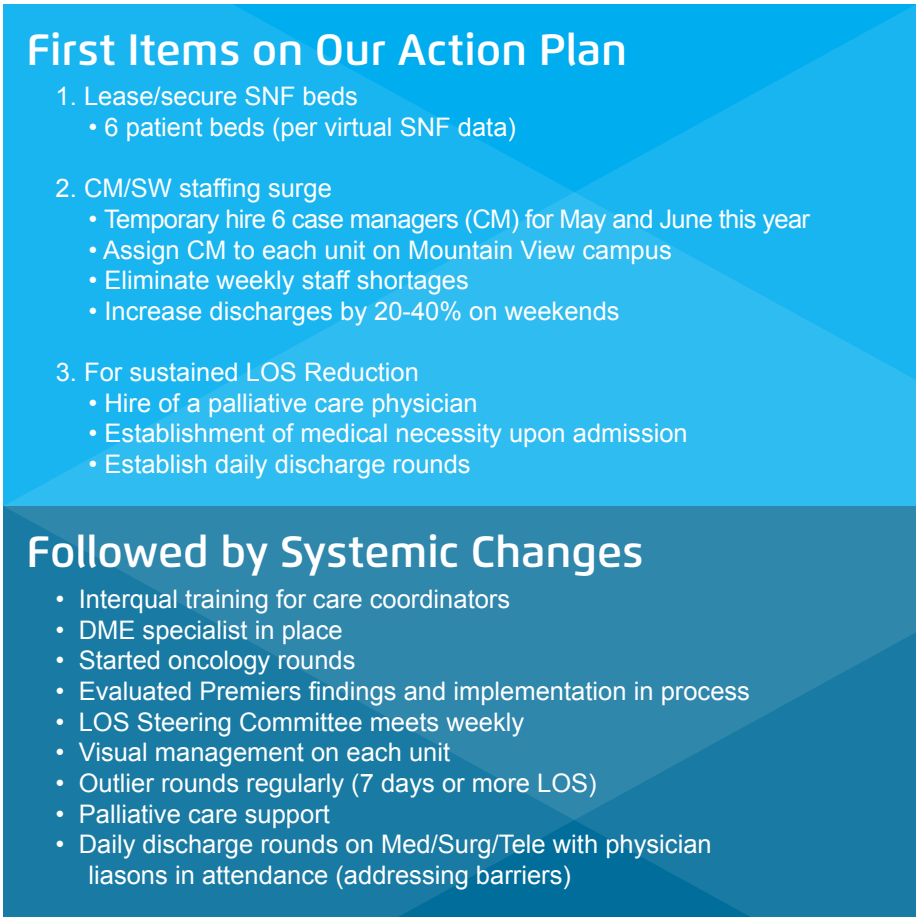

Figure 3. LOS reduction initiative key actions and systemic process changes

to procure funding for additional resources, including expanded nurse care coordinator coverage and additional case managers in the emergency department (ED). The increased coverage of shifts in the acute units to handle late discharges helped to get patients home without having to stay an extra night. The extra resources also allowed for medical necessity reviews on every patient, every day, something which had not occurred previously.

El Camino Hospital also expanded its social work discharge planning support and added clerks to arrange for durable medical equipment (DME) and placement support. The clerks act on orders received from the care coordinator RNs, saving time and effort for the coordinators. This increased efficiency has translated to more time spent with patients addressing their discharge needs, including end-of-life conversations and help with advanced directives, and involving the patient and family in planning and decision-making.

> An effective multi-disciplinary care team is required to support and manage patients post-discharge in order to prevent readmission.
>
> Margaret Wilmer
> Director of Integrated Care
> ECH

- **Starting discharge planning at admission.** El Camino Hospital recognized that LOS could only be managed by addressing the patient's journey through the system from admission to discharge into the community. The hospital developed pathways of care that include the inpatient care process, the discharge plan process, and establishing an estimated date of discharge as early as possible. Follow-up with the patient after discharge is now standard.

  El Camino Hospital tapped into its process improvement and Lean experts to support the effort of developing and implementing standard processes and work and to understand and optimize the patient flow up to and including discharge. These experts helped develop standardized processes and workflows for each member of the discharge rounds team.

- **Implementing multidisciplinary care coordination rounds.** El Camino Hospital implemented daily multidisciplinary care coordination rounds on six initial units, with a focus on Medicare and oncology patients. Patients identified as high risk of a prolonged LOS were further assessed during twice-weekly "outlier rounds" by a multidisciplinary team to address each patient's barriers to discharge and unique support needs after discharge. The daily and weekly "outlier rounds" required multidisciplinary coordination and included project nurse leadership as well as the nurse managing the unit and the patient's nurse, care coordinator, pharmacist, social worker, and attending physician.

  Three physicians (each a hospitalist) also supported the LOS team in these efforts, taking a collaborative approach to working with the attending physicians. Rather than trying to tell attending physicians how to care for their patients, their primary goal was to assist attending physicians in realizing the best possible outcome for each individual patient by asking what they could do to help and what could be delegated to them.

  Physician-to-physician communication and collaboration were key to changes in practice. Physicians were educated about the initiative and its purpose during weekly grand rounds. In these rounds, common discharge problems were identified, and the solutions and approaches that had worked for other physicians were shared.

- **Communicating and coordinating across the continuum of care to prevent readmissions.** El Camino Hospital recognized that communication is key to success and necessary across internal teams to ensure care transitions are

> It was critical for us to help attending physicians know that we were trying to help them and their patients—not to take control of the patient's care.
>
> Michelle Pezzani, MD
> Medical Director
> Utilization Management
> ECH

smooth and complete across the continuum. It is also critical between provider and patients and their families for the most effective outpatient care adherence. Under the new initiative, an integrative clinical care team follows up after discharge with patients who are at high risk for readmission whether they go to a SNF, ECF, or their own home.

INNOVATIVE INITIATIVE REDUCES ALOS, DECREASES COSTS, AND EVEN REDUCES READMISSIONS

Not only did El Camino Hospital exceed its ALOS reduction target, but it also achieved reductions in readmissions and demonstrated that reducing unnecessary days in the hospital is directly correlated with reducing HACs and patient safety indicators (PSIs). These improvements in quality and outcomes also resulted in significant cost savings. In addition, El Camino Hospital has improved bed capacity and throughput as a result of the initiative and is better managing expenses such as supplies and staffing.

Improvements in key metrics have included:

- 7.8 percent reduction in ALOS
  - ALOS improved from a baseline of 5.24 days to 4.83 days
- 14.8 percent reduction in readmissions
  - Readmissions declined from a baseline of 12.2 percent to 10.4 percent
- 55 percent reduction in HACs
  - HACs improved from 11 during the baseline measurement period to 5 during the improvement measurement period.
- 32 percent reduction in incidence of AHRQ PSIs
  - Potential adverse events fell from 2.08 per thousand during the baseline measurement period to 1.41 per thousand during the improvement measurement period (using the AHRQ PSI methodology).
- $2.2 million projected annual cost savings
  - Savings realized from reduction in LOS, HACs, hospitalizations, and ED visits

El Camino Hospital is proud of the teamwork and collaboration that drove these improved patient, financial, and operational outcomes. Leaders emphasize the importance of focusing on a patient-centered approach for a better patient experience. They attribute

> You cannot understand a patient's real needs without entering their hospital room and carefully assessing them. This direct assessment is essential.
>
> Michelle Pezzani, MD
> Medical Director
> Utilization Management
> ECH

the initiative's success to aligned goals, to access to actionable data—and particularly to the dedicated work of a cross-functional, multidisciplinary team that engaged the staff, the patients, families, and the community in its work.

WHAT'S NEXT

The groundwork of the initial LOS reduction program has set the stage for future enhancements, including:

- Incorporating palliative care services
- Adding geriatric psychiatry into the program to address emotional and social needs and aid in making decisions about end-of-life care and quality of life
- Exploring new technology to better monitor patients at home

The LOS reduction team will remain in place so that the initiative remains a leadership priority. The team continuously monitors processes and measures to sustain the progress they have made. Meanwhile, their focus on expanding access to timely and reliable data continues.

REFERENCES

1. Gilbert, J. (2015, August, 5). Hospital readmissions and length of stay. [Web log post]. The Incidental Economist Retrieved from http://theincidentaleconomist.com/wordpress/hospital-readmissions-and-length-of-stay/
2. Moore, B., Levit, K., Elixhauser, A. (2014, October). Costs for hospital stays in the United States, 2012. Agency for Healthcare Research and Quality: Healthcare Cost and Utilization Project. Retrieved from http://www.hcup-us.ahrq.gov/reports/statbriefs/sb181-Hospital-Costs-United-States-2012.pdf
3. Agency for Healthcare Research and Quality. (2015). Interim Update on 2013 Annual Hospital-Acquired Condition Rate and Estimates of Cost Savings and Deaths Averted From 2010 to 2013. Retrieved from http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/pfp/interimhacrate2013.pdf
4. Eapen, Z. J., Reed, S. D., Yanhong, L., Kociol, R. D., Armstrong, P., Starling, R. C.,…Hernandez, A. F. (2013). Do countries or hospitals with longer hospital stays for acute heart failure have lower readmissions rates? Findings from ASCEND-HF. Circulation: Heart Failure. 6(4):727-32. doi:10.1161/CIRCHEARTFAILURE.112.000265

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.