CALIFORNIA HEALTHCARE FOUNDATION

**The Lean Way:**
How California Public Hospitals Are
Embedding a Culture of Improvement

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# Contents

## About the Authors

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## About the Foundation

The California HealthCare Foundation works as a catalyst to fulfill the promise of better health care for all Californians. We support ideas and innovations that improve quality, increase efficiency, and lower the costs of care. For more information, visit www.chcf.org.

# Introduction

When the Embedding Lean initiative was ramping up in 2010, public hospital leaders were celebrating the passage of health reform and the approval of California's five-year, $10 billion[1] Medi-Cal waiver — but also grappling with the new urgency for improvement. The stakes were high, as the California HealthCare Foundation (CHCF), which funded the Lean project, put it: "Public hospital systems are under the gun to increase capacity, enhance patient experience, improve care, and reduce costs. In fact, their very survival depends on it."

In contrast to improving hospitals function-by-function, Lean management creates a culture of continuous improvement at every level of the organization, where needed changes are identified, tested, and implemented. Respect for people and continuous improvement are core values. (See Case Study 1, page 9.) The methodology — developed by Toyota in the 1990s — focuses on maximizing value to the customer and minimizing waste in systems.[2] It has been adapted to improve organizations in many fields, including health care. What is distinctive about Lean is that it is one system, integrated into hospital management, that can be applied across all lines of business to achieve a culture of continuous performance improvement.

Prominent examples of successful full-scale implementation of Lean management in health care include Virginia Mason Medical Center, Denver Health, and ThedaCare. Site visits to these systems launched the CHCF Embedding Lean initiative, as described in a 2013 multimedia piece.[3] CHCF made its first investment in Lean in 2009, and released further waves of funding in 2012 and 2013. Five California public hospital systems received funding: Alameda Health System based in Oakland; Contra Costa Regional Medical Center in Martinez; Harbor-UCLA Medical Center in Torrance; San Francisco General Hospital; and San Mateo Medical Center. Implementation at these hospitals is synopsized below and described more fully in case studies beginning on page 9.

**Alameda Health System (AHS)** began its Lean journey with a 2009 grant from CHCF. Lean is positioned at AHS within the Systems Transformation Center (STC), a hub for improvement initiatives, including Lean, created in 2012 to consolidate these activities. Heading Lean activities is a "black belt"[4] practitioner with deep experience developing strategic direction. AHS can point to significant achievements with Lean (see Case Study 2, page 11), even as Lean events are currently on hold while the system regroups and strengthens executive-level buy-in.

**Contra Costa Regional Medical Center (CCRMC)** integrates Lean with the Model for Improvement used by the Institute for Healthcare Improvement (IHI). Although Lean is not CCRMC's dominant change methodology, it has effectively been used to achieve performance improvements. CCRMC is an interesting test case for Lean used as an adjunct methodology. The health system is currently in strategic planning mode and staff report that they cannot imagine moving forward without Lean, although its future role and relative importance remain to be determined.

**Harbor-UCLA (Harbor)** is the newest hospital to embark on the Lean journey, having staffed up in 2013. CEO commitment is high and staff selected to head Lean activities are seasoned change agents with long, respected tenure at the hospital. They are closely integrated with the hospital's executive team. Harbor has the unique advantage of sharing a hometown (Torrance) with Toyota USA, which has donated what they term "skillanthropy" to coach and build Harbor's capacity for Lean implementation and expansion. Early activities have shown positive results. (See Case Study 3, page 13.)

**San Francisco General Hospital (SFGH)** displays a high commitment to Lean, which was first championed by the chief quality officer, who has since become the chief operating officer. Other advocates include the associate chief medical officer and medical director of quality management, signaling highly visible Lean leadership on both the administrative and medical sides of the house. Thus, though relatively early in implementation, SFGH, like Harbor, has positioned Lean within the hospital infrastructure to achieve visibility and secure buy-in.

**San Mateo Medical Center (SMMC)** has been wholeheartedly implementing Lean since their first grant in 2009. From the beginning of their Lean journey, SMMC has maintained the clear goal to make it their pre-eminent system change and management system. SMMC offers an interesting example of a journey with the clear end-point of becoming a Lean organization. (See Case Study 4, page 16.)

Key observations and learnings about embedding Lean at these five county systems are summarized below.

# Building the Infrastructure

Lean requires a robust infrastructure for widespread implementation. To this end, the five sites created Kaizen Promotion Offices (KPOs), and most provided staffing and training for internal Lean leaders well beyond the CHCF funding. Lean staff and KPOs were positioned at sufficiently high and strategic points in hospitals' organizational structures to be directly involved in system direction-setting activities. A few sites used other change methods in addition to Lean. Following are some details about the sites' staffing and positioning of Lean.

## Lean Training and Staffing

Lean training is modeled after the martial arts, where trainers progress through the ranks to attain the highest level, "black belt" *sensei* (teacher) status.

During the Embedding Lean project, a total of 303 individuals across the five hospitals received some level of certification.

To staff their KPOs, the hospitals reported a total of 26 full-time employees and three part-time staff with a range between two and 10 full-time people. SMMC and AHS hired new staff to lead their KPOs, while the others redeployed personnel already on staff.

Both SMMC and CCRMC use fellowship programs to augment their KPO staff. SMMC has an 18-month leader fellowship program that pulls staff from various positions within the hospital system and assigns them 18-month roles working in system change, after which they return to their original positions. Five of the 10 Kaizen Program Office FTEs in SMMC are full-time Fellows. CCRMC has a 15-month Change Agent Fellowship program that teaches Fellows change methods two hours per week. Because Fellows are not assigned to a KPO, they are not included in the staffing numbers, although they do offer important support to the improvement events.

All of the sites began their Lean work with extensive training and consultation from the Rona Consulting Group.[5]

Over time, the hospitals played increasingly active roles shaping the work and developed internal capacity to fulfill some roles that the consultants had played. Some sites chose to "graduate" from the outside consulting. AHS, for example, hired Lean "black belt" staff in its KPO. Although SMMC has developed internal capacity to certify staff, they continue to see a need for consulting help. As CEO Susan Ehrlich explained, "This is such a different way to lead that you have to have someone coaching and watching you…I feel you need outside experts."

## Common Lean Terminology

**Muda** means waste. Processes that do not add value should be identified and removed.

**Value Stream Mapping** involves depicting a product or service as it is currently and how it could be.

**Kaizen** means "improvement." Kaizen events (typically one-week) focus on a segment of a Value Stream. Participants develop a statement of the problem, a hypothesis about what needs to change, and a desired future state. Then trials are undertaken to test the theory.

**Kaizen Promotion Office (KPO)** is an organizational entity created and staffed to lead Lean management and activities.

**Standard Work** refers to agreed-upon, standardized processes for accomplishing something. Its purpose is to reduce variation and increase quality.

**Leader Standard Work** refers to explicit and shared protocols for staff in leadership roles.

**Gemba** means "actual location" where the work is done by the staff involved in it. This often involves huddles of employees who play a role in the process being improved.

**Process Owners** are hospital staff who take a leadership role in a Value Stream or Kaizen.

**5S Process** means "Sort, Set in order, Shine, Standardize, Sustain." It refers to organizing and maintaining a physical location — such as a storage area — for maximum efficiency.

**Hoshin Kanri** refers to the big picture of hospitals' strategic aims and how the Value Streams and other Lean activities contribute to that.

**Pull System** addresses supply as well as demand.

Because the health care environment has high turnover, there are barriers to building a cadre of personnel trained in Lean. Therefore, training must be rigorous and ongoing for the approach to be effective over time.

## Positioning Lean in the Organizational Hierarchy

Ideally, Lean is closely integrated with the overall leadership of the hospital so that it will be used strategically to address central concerns of the organization. At two sites, the head of the KPO reports directly to the CEO. At two other sites, the KPO head is one level removed from the CEO, reporting to the chief quality officer or to the COO. At one site, the Lean leader reports two levels down from the CEO.

In two hospitals, the head of the KPO sits on the executive management committee. In two, the KPO is represented by the supervisor of the KPO. In the fifth, it is assumed that all of the executive committee members will know about the Lean activities that are occurring so there is no specific liaison to the committee.

Lean is not the only change approach being used at the five sites. SMMC has committed to Lean as their dominant change methodology, and SFGH and Harbor appear to be moving in that direction although they are not exclusively Lean. AHS and Contra Costa are creating models in which Lean is integrated with other approaches.

A challenge for hospitals can occur when their health system or county administrative unit adopts different change methodologies. This can lead to the need for rebranding or careful messaging in order that staff not become confused or diverted.

For example, SMMC, in its goal of becoming a Lean management organization, has rebranded their Lean effort as "LEAP" (Learn, Engage, Aspire, Perfect). Their KPO became known as the LEAP Institute. This was done in part to distinguish their use of Lean from different approaches that are being used in other administrative parts of the county and public health system.

SFGH has relied heavily on the PDSA (plan-do-study-act) approach to change for 15 years, and they continue to use this strategy for small changes, reserving Kaizen events for more complicated interdisciplinary problems "that require deeper dives." They also use CICARE (Connect, Introduce, Communicate, Ask, Respond, Exit courteously), a system-wide approach adopted by the Department of Public Health to consistently meet patient expectations.

AHS has branded their approach to change as "The AHS Way." They are planning to incorporate different change strategies into it, particularly Six Sigma (which is similar to Lean, but places a stronger emphasis on statistical analysis) and change methodologies learned from the Studor Group (which emphasizes the visual display of performance benchmarks). Former CEO Wright Lassiter characterized The AHS Way as the tool belt, and Lean as one of the tools on it. The AHS Way emphasizes fundamental similarities among the different approaches. Because there are some areas of overlap between Lean and other change approaches, such as displaying data, it remains to be seen how responsibilities will be managed from the Systems Transformation Center.

Contra Costa is relying most heavily on the Institute for Healthcare Improvement for change support and it incorporates Lean methods into the small tests of change emphasized by IHI. CEO Anna Roth characterized the relationship this way: "The IHI's Model for Improvement is the theory of change. Lean is the discipline." As an example of integrating the two approaches, CCCMC described a partnership with IHI for ambulatory system redesign. In this partnership, IHI develops and runs an improvement collaborative across four clinics. "These teams fused Lean philosophies and tools, such as Standard Work and leveling of appointment supply and demand to drive improvement," said Roth. "Members of the KPO acted as performance improvement support for the team. In addition to the steady improvement activities of the teams, Kaizen events were convened to drive further rapid cycle improvement."

# Four Stages of Lean

The public hospital sites observed four major stages in their Lean journeys. The main lessons learned from those stages are summarized below.

## 1. Introduction, initial training, and early events

All of the sites started with Rona Consulting training executive staff in Lean methods. Executives participated in site visits to high-performing organizations such as ThedaCare, Denver Health, and Virginia Mason. The

sites started hands-on improvement events soon after their trainings, which quickly deepened staff learning and started the spread of Lean into the hospital systems.

A common observation among the sites was that early in the implementation process, staff were very enthusiastic and there was a large demand from different departments to be the focus of a Lean Value Stream. Newly trained Lean leaders were eager to head those events. Therefore, managers stressed the importance of managing expectations during the early implementation phase. The hospitals cautioned that it is easy to become caught up in events without giving sufficient weight to the infrastructure that must support the accomplishments in the long run.

Several sites reported an early problem of "rogue" Lean events conducted by enthusiastic, newly trained leaders. Because successful Lean requires a strong backup of organizational support, it is necessary to rein in unsanctioned Lean activities. At the same time, it is important to have a supply of Lean activities that can use the skills of new trainees so that the skills will not be lost.

Other lessons learned from the early stages of implementation include:

> Sites emphasized the importance of seeing Lean in action in early implementation. Some suggested that an on-site demonstration unit to model how Lean works would be useful.

> Lean vocabulary can be an obstacle. The word Lean itself connotes fewer staff and resources to some employees ("Watch out, you're going to be Leaned," became a common expression in one hospital). Further, the Japanese-language terms can be off-putting. This was one reason that SMMC re-branded their Lean initiative.

> Teaching hospitals learned it is important to include residents in Lean trainings, as their buy-in is important and lack of it can derail progress.

## 2. From events to Standard Work

After mastering events, staff grappled with how to sustain gains. As SMMC's CEO Ehrlich explained, "The week of the Kaizen can be magical. When we survey patients and staff, almost 100% think it's amazing. The issues come in the weeks and months that follow, where you have to implement the Standard Work outside of a protected (transformational) environment. We're redoing an event that we did a couple of years ago because we weren't able to sustain the work. The 'after' work is so hard. It's like having a baby when the birth is so exciting and the hard work lasts for years."

The sites agreed that new processes should be codified in Standard Work (a method of defining best practices and assuring that they are consistently followed). This creates a bulwark against drift away from the new processes designed in improvement events. They also found that the persistent display of metrics through the use of visibility walls and internal communications helps sustain a focus on improvements.

## 3. From Standard Work to Lean management

Even with Standard Work in place, it can easily derail if no one is watching. At this point the management system and whether or not it is reinforcing Lean comes into focus. There appear to be cycles of deepening the commitment of leadership to managing from a Lean perspective. After several years of implementing Lean, for example, San Mateo found it important to place renewed emphasis on immersing hospital leadership in the methods. This led to taking 40 staff leaders to ThedaCare in Wisconsin.

The sites noted that buy-in from executive level management becomes more important as sites deepen their work with Lean. This is when leaders need to practice Lean, not just cheerlead for it.

## 4. Cycles of continuing spread and deepening work

CEOs with more Lean experience stressed the process nature of Lean in which the effort continues after an objective is met. Tasks undertaken once are often revisited and strengthened. In this way, leaders refresh and increase their knowledge of Lean as hospitals become more immersed in it.

Rather than static steps on a journey, the sites found, Lean is best conceived as recurring cycles in which knowledge and practice continue to deepen and spread.

# Improvement Impacts

Tables 1 and 2 provide examples of improvement activities and outcomes from the five public hospitals.

**Table 1. Access and Efficiency Improvements for Five Public Hospitals**

| HOSPITAL | IMPROVEMENT ACTIVITY | OUTCOME(S) |
|---|---|---|
| **Reductions in Time Required to Make an Appointment** | | |
| Alameda Health System | Ambulatory Primary Care Value Stream | ▶ 47% reduction in third next available appointment (TNAA) (from 230 days to 121 days) |
| Contra Costa Regional Medical Center | Appointment Unit and Medical Staffing Office Value Stream | ▶ 31% reduction in TNAA (from 16 days to 11 days) |
| Harbor-UCLA | Ophthalmology Clinic Value Stream | ▶ 200% improvement in access to eye clinic (average number of new patients seen per day doubled from 5 to 11) |
| San Francisco General Hospital | Radiology Value Stream | ▶ Met TNAA lead time goal for CT scans (from 5 days to 3 days) |
| San Mateo Medical Center | Primary Care: Access and Quality Value Stream | ▶ Wait list reduced from 2,500 to 0 |
| | Aging and Adult Services IHSS Program Value Stream | ▶ 49% reduction in amount of time to receive services through IHSS program (from 120 days to 61 between November 2013 and November 2014) |
| | | ▶ 47% reduction in TNAA average for clinics (from 17 days to 9 days) |
| **Patient Flow** | | |
| Alameda Health System | Ambulatory Primary Care Value Stream | ▶ 15% reduction in entry to exit cycle time (from 68 minutes to 58 minutes) |
| | Psych Emergency Services (PES) Value Stream | ▶ 19% reduction in length of stay (from 25.7 hours to 20.8 hours) |
| Contra Costa Regional Medical Center (Concord Health Center) | Primary Care Value Stream | ▶ 10% reduction in entry to exit cycle time (from 70 minutes to 63 minutes) |
| Harbor-UCLA | Ophthalmology Clinic Value Stream | ▶ 50% reduction in eye clinic cycle time (from 4.5 hours to 2.25 hours) |
| San Francisco General Hospital | Inpatient Value Stream | ▶ Simulated patient flow across levels of care to determine staffing and resources needed |
| | Operating Room Value Stream | ▶ Identified reasons for late starts — prolonged workup by care team, instrumentation/equipment, and patient-related delays |
| San Mateo Medical Center | Acute Psychiatry Value Stream | ▶ Incomplete discharge tasks decreased from 45% to 5% for patients clinically ready for discharge |
| **Faster Discharge Processes** | | |
| Harbor-UCLA | Inpatient Unit (6 West) | ▶ 80% reduction in time patients wait between notification they will be discharged and actual discharge (from 10 hours to 2 hours) |
| | | ▶ 33% reduction from the time a discharge order is written to when the patient exits the hospital (from 3 hours to 2 hours) |
| **Reduced No-Shows and Cancellations** | | |
| Alameda Health System | Ambulatory Primary Care Value Stream | ▶ 13% reduction in no-show rate (from 23% to 20%) |
| San Francisco General Hospital | 3M Surgical Clinic Value Stream | ▶ Developed Same Day Surgery Cancellation form as a communication tool for the Surgicenter and 3M Surgery Clinic to reschedule surgeries on the same day they are cancelled |
| San Mateo Medical Center | Operating Room Value Stream | ▶ More than $450k generated by reducing cancellations |

**Table 2. Quality Improvements for Five Public Hospitals**

| HOSPITAL | IMPROVEMENT ACTIVITY | OUTCOME(S) |
|---|---|---|
| **Safety and Security** | | |
| Harbor-UCLA | Inpatient Unit (6 West) | ▶ Decreased medication errors in inpatient unit for 12 months and ongoing (from 4 per month to 0 per month) |
| | | ▶ Improved access to eye clinic specialty care by doubling the average number of new patients seen per day (from 5 to 11) |
| San Mateo Medical Center | Pharmacy Value Stream | ▶ Sustained 70% reduction in time it takes to fill an outpatient pharmacy prescription (from 160 minutes to 48 minutes) |
| | Patient Safety Value Stream | ▶ 300% increase in monthly incident reporting volume (from 30 to 132 between January and November 2014) |
| **Procedures and Patient Satisfaction** | | |
| Contra Costa Regional Medical Center | Primary Care Value Stream | ▶ Cost reduction of $66,000 over the last year achieved by improvements in processes and staffing for medication refills (reducing temporary staff level from 6 to 5 due to increased efficiency) |
| San Francisco General Hospital | Outpatient Pharmacy Value Stream | ▶ Payments for prescriptions are collected at pharmacy pick-up window rather than the cashier's office |
| | Urgent Care Center Value Stream | ▶ Achieved target goals for 4 of 7 patient experience survey metrics, including "Staff Care and Communication" and "Overall Experience" |
| | Inpatient Unit Value Stream | ▶ Eliminated 100+ redundant or irrelevant admissions processes |
| San Mateo Medical Center | Behavioral Health and Recovery Services Value Stream | ▶ 53% reduction in incomplete treatment plans (from 208 to 98 between October 2013 and November 2014) |
| | Emergency Room Value Stream | ▶ 32 percentile point increase in patient "likelihood to recommend" scores (from 7th to 39th) |

# The CEOs' Perspectives

The five CEOs discussed their perceptions about the Lean journey as well as their plans for Lean over the next two years. Evaluators asked CEOs to identify the two or three critical factors that helped or hindered their efforts. These "pivot points" are:

**Motivation.** An organizational culture and environmental readiness for continuous improvement are pre-requisites, along with agreement that Lean is the appropriate tool for the needed improvements. Several CEOs described the growing enthusiasm for innovation that participating in Lean events can create.

**Leadership.** Leadership from all sides — from the county, executive leadership, and providers — is a tipping-point factor. Early buy-in from the senior leadership team and physicians is indispensable. Two CEOs reflected that it would have been beneficial for senior leadership to engage in Leader Standard Work earlier in their Lean journeys, for both modeling and accountability reasons. The five CEOs felt that top-executive engagement is crucial to the success of Lean. They reported dedicating between 13% and 18% of their work weeks to Lean, and most hoped to increase that amount.

**Communications.** Communicating the notion that Lean is an enduring framework that will be sustained over time is critical because safety-net organizations have usually been inundated with different improvement methods that have proved to be temporary. Even when there is buy-in from senior leadership, assuring that leaders are communicating the same message is a challenge.

**Long-Term Focus.** CEOs emphasized the challenge of maintaining an improvement focus for the long haul. They described the delicate balance between praising

good work and maintaining the discipline of continuous improvement. Visibility walls with metrics were singled out as a motivational and useful tool for maintaining clarity of direction. One CEO pointed to Lean's requirement for senior leaders to be present to listen to staff and patients as an intrinsically motivating experience that is helpful for the long run. Another pointed to the fundamental shift that occurs when line staff become problem solvers.

# Case Studies

Even after a relatively short period of time since start-up, Lean has resulted in innovations that have increased patient access and improved the quality of health care in each of these five hospital systems. Although Lean is implemented differently in each system, all five remain committed to using Lean to improve additional areas of their health organizations. Their stories are described in the following case studies.

CASE STUDY 1
## Engaging Patients in Lean Improvements

Respect for people is a foundational tenet of the Lean approach. While other case studies in this series point to respect for people as it relates to employees, this case example looks at ways that several Embedding Lean sites demonstrate respect for people by integrating patient voices into their improvement processes.

All of the hospitals in the Embedding Lean initiative seek patient input and feedback. Some conduct surveys of patients, while others include patients as members of standing committees focused on improvement. Still others include patients in Kaizen improvement events. The following discussion draws on interviews conducted with patients and staff at three public health systems: Contra Costa Regional Medical Center (CCRMC), San Francisco General Hospital (SFGH), and San Mateo Medical Center (SMMC). The interviews highlighted some best practices that staff and patients at these sites have identified for integrating patient input into improvement processes.

At CCRMC, patients have been involved with improvement processes since 2010, and they now participate in approximately three-quarters of the medical center's

improvement events. Patients and families are invited to take part in weeklong rapid improvement events or monthly improvement committee meetings.

Because recruiting patients and families can be challenging, CCRMC enlists the assistance of their providers — doctors, nurses, and other staff. Providers suggest names of patients who may be frequent visitors or who may have had unsatisfactory visits. To recognize the importance of their time commitment, CCRMC compensates patients and families for participating.

In San Mateo, a psychiatric nurse pointed out that positive, affirming feedback from patients can be as useful as challenging input. She recounted hearing during a Kaizen event how her caring attitude had made an important difference to a patient — feedback she did not receive at the time. The nurse explained that this feedback helped her reconnect with the passion that had initially propelled her into psychiatric nursing.

Staff at SFGH were surprised to learn from a patient that she had to wait in a bleak hospital waiting room for so long that she watched two full-length feature films on the waiting room television before she was able to see a provider.

*"We liked to think of ourselves as a great public hospital because we have the awards and accolades to prove it, but this perception was in deep contrast to the experiences of some patients."*

— SFGH staff member

In another SFGH improvement event that was focused on improving communications, a patient pointed out that staff was talking exclusively about communications among providers, overlooking how they communicate with patients. Such input can be deeply surprising to staff. Negative or critical patient input can be a motivational driver for improvement, and can help prioritize improvement efforts.

Lean practitioners noted that patients can add a unique perspective to the Kaizen. For example, in a CCRMC Kaizen event focused on the discharge process, a patient pointed to a problem she experienced with the

after-visit summary provided to patients as a memory aide for instructions and medications. To create these summaries, staff simply printed out a treatment history, not necessarily confined to the just-concluded visit. Because this patient had experienced a prior trauma, this traumatic event was reflected in post-visit printouts given to her after every visit, causing her to repeatedly re-experience the earlier trauma. A simple fix in the electronic health records resolved a problem that never would have surfaced without inclusion of the patient voice.

At all the Embedding Lean sites, learning to accept the patient perspective appears to follow a pattern. At first, staff can be defensive and often take patients' critical comments very personally. With some time and the help of a skilled facilitator, staff learns to listen, value, and solicit the patient perspective to improve Standard Work.

### Preparing Staff to Work with Patients in Improvement Events

► Advise staff that they will hear honest feedback and that they may not like or agree with what patients have to say.

► Remind staff to respect patients' participation and to ensure that they feel heard.

## Patients Reflect on Participating in Improvement Processes

A common theme drawn from interviews with patients is that it can be intimidating for them to sit in a room full of physicians, nurses, and staff. Therefore it is important to prepare patients, families, and providers for the improvement process. One well-prepared patient said, "Both times [I participated in an improvement event], they treated me wonderfully, they valued my opinion, and they praised me. I wasn't looked down on. It was hard because I'm disabled and I have chronic pain. I was exhausted at the end of the day, but I enjoyed it. It was amazing how the process worked."

Nancy Wilson spoke about her participation in a Kaizen devoted to San Mateo Medical Center's acute inpatient psychiatric unit. She had been an inpatient in 2006, and had been readmitted in 2007 on a 5150 and then transferred to a long-term locked unit.[6] "I was horrified," she

remembered. "It was alarming because I had never been on a hold. There were no boundaries or choices. I felt like I wasn't there. They didn't see me."

Wilson first participated in a Kaizen in 2011. "I was brutally honest. It was amazing, mind-boggling. Some of the staff that participated had been doing the same job in the same way for 15 or 20 years. To get their engagement and willingness was amazing," she said. Some participants in the Kaizen were nurses in the unit when Wilson was a patient there. "It was very eye opening to some of them. I told them about what it was like…how it feels like you are on the receiving end."

She offered some suggestions for staff to help patients regain some sense of control. "For example, it would be good to ask, 'When do you want to take your medication?' Or, 'Lunch comes at 12, do you want to eat it then or wait till later?'" Wilson acknowledged that "I probably stepped on a few toes, but after about five conversations, they heard me."

Wilson is now a patient advocate who routinely visits people where they are being treated. She discussed going back to the locked ward and talking with people. "It's been a great experience," she said. "You see the county get very excited about a lot of things and it all fizzles, but this didn't. [Now] they are so much more welcoming. I don't see much client care that isn't good. The presence of security is less intrusive. The whole milieu is different. Everyone there seems happy. It isn't like everyone on staff wants to get out of there. It's more like a community." She noted that the care is now more trauma-informed, "which means there are boundaries — like asking permission to talk with you or touch you."

Wilson is also impressed by the Kaizen Action Board — the graphs and monitoring that indicate what has been achieved and what still has to be done. "Anyone can look at it — it's transparent and that's huge. I spent a whole week helping to design that and I'm so glad it's still going. It's very exciting to see that."

Not all patient experiences are positive, and most criticisms concerned lack of follow-through and communication. A patient explained, "I felt that it [my input into the Kaizen] would be valuable if they do take the recommendations to implement it. But I haven't heard or seen anything since."

While most patients understand that culture change and long-term improvements take time, it is important to phone or email participants so they understand the impact of the improvement event and can assess whether it was a valuable use of their time.

CASE STUDY 2

# More Efficient ED Services at Alameda Health System

Well over 200 people from Oakland's highly diverse community come through Highland Hospital's Emergency Department each day. Highland is the flagship of Alameda Health System (AHS), which provides services throughout sprawling Alameda County.

Although consistently known for its high-quality emergency care and trauma services, the ED's large volume of patients — particularly non-acute patients — led to wait times of up to eight hours to see a provider.

Highland's implementation of Lean methods sought to improve conditions in the ED. The processes included a Value Stream map, Kaizen, and the 5S process. Although some of the changes were initiated prior to this initiative, Lean was the first approach to create a framework and structure for improvement efforts throughout the hospital.

Following are some of the challenges identified by ED staff and how they were addressed.

## Addressing Non-Emergent Care in ED

With few options for primary care and limited capacity at other Oakland hospitals, many patients used the Highland ED as an urgent care center. All non-trauma patients, regardless of acuity, filtered through the same space. As an example, a patient with influenza went through the same process as one with severe, unexplained abdominal pain.

*"Previously, we just tried to make things work. It was a M.A.S.H. mentality. There have been many other change efforts, but Lean was the first approach to address hospital-wide problems. It was new to think of the hospital as a whole machine (with so many cogs needed to make it work), and not as individual parts."*

— Berenice Perez, MD
ED Medical Director

To treat low-acuity patients more quickly, AHS implemented a triage protocol to divert those patients into a FastTrack system. Some physical changes to support the new patient flow were implemented, including replacement of the large waiting room with cubicles for FastTrack patients. Over 40% of all ED patients now go through the FastTrack system, freeing up ED beds for more critical patients.[7]

## Staff Resistance to Lean

There are many reasons why staff is not always immediately enthusiastic when Lean is introduced. Some staff perceive Lean as "cultish," with its Japanese-language terminology that originated as part of the Toyota Way. Initially, staff can be dubious about using a method adapted from auto manufacturing, fearing that they or their patients would be treated like car parts. Still other staff has experienced many different change intervention

methods and assumes that Lean will just be one more, "flavor of the month." Finally, many providers are accustomed to following their own instincts about how they should work.

Highland's ED staff described how the Lean process itself helped dissipate skepticism about the initiative. A first Value Stream map was created in 2012 to follow a patient's experience from the time they enter the ED to when they leave. Shareen Cronin, director of emergency and trauma services, explained, "Many among our staff have worked here for a long time, and could recite the procedures and practices influencing care in the ED backward and forward." The Value Stream map, she said, "took people off autopilot and made them look at the process in a very new light — through the patient's perspective." She noted that employees were proud of the care they were offering, "but from the patients' point of view we were making them go from registration, to triage, to finance — basically from here to there and back again." Not surprisingly, sick and injured patients had very little tolerance for the difficult processes.

ED Medical Director Berenice Perez pointed to performance metrics as another important factor in convincing staff to try Lean. "Showing them the data is powerful," she said. "It's a dose of reality. We are not operating by perception alone."

"Easy wins" highlighted by AHS and other sites are the Lean 5S workshops that systematize physical spaces such as patient rooms, supply rooms, and supply carts. The S's stand for "Sort, Set in order, Shine, Standardize, and Sustain." The process results in Standard Work for staff to maintain the systematic approach to organizing goods and supplies.

### Table 3. ED Length-of-Stay Improvements to Date

|  | SEPTEMBER 2012 | SEPTEMBER 2014 |
| --- | --- | --- |
| FastTrack patients | 300 minutes (5 hours) | 123 minutes (2 hours) |
| Patients discharged | 320 minutes (5.9 hours) | 275 minutes (4.6 hours) |
| Patients admitted | 990 minutes (16.6 hours) | 564 minutes (9.4 hours) |

"We desperately needed to do a 5S," explained Shareen Cronin. "With thousands of sprawling square feet, there are many places where supplies and equipment needed to be placed but often weren't." The 5S process involved doctors, nurses, central supply, a patient representative, and administrators. They removed excess materials out of the drawers and closets and created a model room, seeking agreement on where things should go.

The group answered many questions, said Cronin: "Do we have enough space in the room? Can patients and doctors sit down? Can patients' family members sit down? Can we accommodate a wheelchair?" After the team created the model room, she said, "within days the staff was clamoring to have the other rooms done similarly."

In these ways, Lean began to sell itself and overcome resistance from staff.

## How to Sustain Improvements

Lean efforts in the ED helped staff make significant gains in reducing the length of stay. For example, as the chart shows, between September 2012 and September 2014, time for FastTrack patients was reduced from five hours to two hours. Patients admitted to the ED and discharged to home decreased their stay from over five hours to four and a half, and the length of stay for patients admitted to the ED and eventually to the hospital reduced from 16.6 hours to 9.4 — a 43% decrease.

The ED leadership is ultimately aiming for even larger reductions, but sustaining the gains is difficult. Cronin explained, "We are masters at creating and rolling it out. The sustaining part is where we have challenges. . . . It's not a perfect science. Things can unravel."

The solution to sustainability is a process of persistently coming back to problems, sometimes redoing Value Streams or Kaizen to rethink a problem, and slowly changing the workplace culture to become one of continuous improvement. For example, when ED throughput targets were not being met even after FastTrack had been installed, Cronin and staff undertook another Kaizen. This event revealed that the FastTrack was still too chaotic, and resulted in the creation of a flow coordinator position. Existing staff are assigned to this position on any given day to oversee the flow of patients in FastTrack.

Such persistence in confronting problems created a culture change in which there is widespread commitment to continuous improvement and to Lean as a reliable approach.

## What's Different About Lean

Lean is not the first strategy tried by the ED to improve efficiency. A previous change initiative was led by a private consulting firm. The process was very scripted, according to Cronin, and there was no opportunity to test the potential changes. "Staff members felt like the method was forced on them," she said. "They rebelled and it failed miserably."

Cronin described what she felt to be different about Lean. "It is very frontline-staff focused. I like that. It's getting them involved in that process. Lean does it in stages so you test, see if it works, and continue to tweak it. The approach with Lean is 'let us help you' and that's more empowering."

Theresa Cooper, assistant nurse manager, agreed. "During our first Lean event," she said, "I was front line staff. It was a democratic process. It's empowering to be in that room. Then it extends and permeates through the staff. Our staff has taken this and it has become their baby and once they take it on, that's when it really sells. It's much more effective than when management demands it."

Despite much progress, ED staff still finds it a challenge to get a critical mass of staff to understand Lean. "Participating in improvement events is key to building understanding and excitement about the Lean approach," said Cronin. However, with more than 170 non-physician staff in the department, "there aren't enough Kaizen events to involve every staff member."

Nevertheless, AHS staff are anticipating the snowball effect that Lean practitioners describe for how commitment to the method grows. The more exposure and practice staff has in implementing Lean, the more the culture changes so that continuous improvement is an expectation.

## CASE STUDY 3

# Lean Improves Access and Efficiency at Harbor-UCLA Ophthalmology Clinic

When Delvecchio Finley assumed leadership of Harbor-UCLA Medical Center in 2011, he was already well-versed in Lean strategies from his experience with Lean at Sutter Health in San Francisco. He embraced the opportunity to jumpstart Lean at Harbor with grant funds from the California HealthCare Foundation.

A key decision to introduce and build credibility for Lean at Harbor was to staff the Kaizen Promotion Office (KPO) with highly regarded, long-term employees. Susan Black, RN, MSN, was appointed to head the KPO from her prior position as the hospital's chief quality officer.

*"I am proud of all the processes we fixed over the years using traditional quality improvement methodology. But if I had a dollar for every time we 'solved' a problem only to go back six months later to find the process in the same or worse state than before the 'improvement,' I would be retired.*

*"The difference with Lean is that sustainability and true continuous improvement are built into it."*

— Susan Black, Chief
Kaizen Promotion Office

Harbor-UCLA is located in Torrance, California, also home to Toyota USA. The hospital built a relationship with the Toyota Corporation, which generously offered their staff to serve as volunteer mentors for one of Harbor's first transformation efforts focused on their outpatient ophthalmology clinic. The KPO created a video to document how they used Lean in this project.[8]

## Background

Pradeep Prasad, MD, Harbor's chief of ophthalmology, set the context for the clinic's work with Toyota: "Our eye clinic takes care of a very large population of patients

with limited access to eye care. As a result, they often have very advanced eye pathology — rare conditions and very advanced. There are multiple people and multiple services involved in taking care of our patients, so that it is challenging. It requires a coordinated effort."

Working closely with Toyota volunteers, Harbor conducted a Value Stream mapping process and decided to focus its efforts on five connected strategies to improve the eye clinic.

## Decreasing Waste

Prasad explained a problem the Lean team identified in the clinic. Using direct observation and flowcharting, they recognized that "Our residents were spending more time in the hallway than with their patients, and we needed to understand why." The team worked with their Toyota partners to analyze the problem. Residents were spending too much time looking for eyedrops or prescription pads that were locked up, or they were looking for forms kept in hallway cabinets. Then they also had to go and look for their next patient. Prasad said, "We determined that one of the most important things we could do would be do reduce the *muda* or waste in the doctor work process."

The solutions that the team developed were described by Debbie Balster, RN: "We put a supply medication box in each room for the doctors to use." It is stocked with commonly used forms that are needed on a daily basis, and the supply carts were standardized with the supplies that are needed. "In the forms folder we placed what we call the *kanban*," added Balster. "Kanban is a Japanese word for a visual symbol that is used to trigger an action — it alerts the nurse when the forms are nearly gone and need to be replaced so they never go down to zero and the doctor doesn't have to go running around the clinic looking for one." The same replenishment process is used for the medication box and supply carts in each room.

James Sanchez, MD, a resident who worked in the eye clinic both before and after the Lean interventions, explained why the changes were so important. "I have vivid memories of the last year and a half (before the intervention) running into the hallway, asking for anyone with the keys to the supply cabinet, getting the keys to the back room so I could get the drops from the supply cabinet to finally put the drop in the patient's eye and then running back to return the keys and the drops. That

whole process took at least 5 to 10 minutes. Now it takes 10 seconds at most. I just turn around and grab what I need, move forward, and see my patient. Things like this have been implemented all over the clinic and it's completely changed the way we work here."

## Improving Patient Flow

The staff observed that many patients were shuttled back and forth between the clinic and waiting room multiple times for different aspects of their visit. This led to confusion and re-work.

To solve this problem, staff created a one-stop shop. Patients are brought in one at a time and the workflow was changed to revolve around the patients rather than the staff. All of their medical needs are addressed before they leave the clinic. Lidia Anaya, RN, described this intervention, called "one piece flow." "When the patient comes back into the clinic for their eye exam, they stay in the clinic until they see the doctor and are discharged by the nurse," explained Anaya. "The patient no longer has to go back in and out of the waiting area multiple times. This has reduced a lot of traffic in the clinic, making it much quieter."

## Improving Front Office/Clinic Flow

Staff in the clinical areas had no way to see and anticipate the workload in the front office/waiting room. There were stacks of charts in the front office and clinic, with many people sorting through trying to figure out who was next.

Staff improved communication between the front office and clinic through a color-coded system with clear signals to all staff about when a patient is discharged and when the next patient is ready to be seen. The color-coding system provides information to all staff about the appointment type (e.g., general, retina, and laser). "We created what we call 'lanes' to organize the way charts are handled," explained Anaya. Each color-coded lane holds the charts for a different clinic type. This process helps to keep patients in line even if they need to receive dilation or other tests.

The Lean team also created what's called a *pull system* in which the doctor takes the chart out of the kanban box to see the patient. The empty box is placed in a designated area in the clinic, which signals the front desk to prepare the same clinic type patient to see the doctor. "This has decreased the waiting time for the patient and the physician," said Anaya.

## Eliminating Re-work

In Lean terminology, explained Susan Black, "Rework is whenever a process flow step is repeated due to a defect in our own processes." At the ophthalmology clinic, patients who had their eyes dilated sometimes had to wait for the doctor so long that they required re-dilation; this was a nuisance to patients and staff.

Anaya described the pre-intervention process: "For every patient that checked in we had their charts — 20 to 30 charts at a time waiting. Some of these patients would get dilated waiting for the doctor, but then they would wait for hours with a lot of commotion going on as various staff were looking through the charts to find out who was next in line. We had stacks of charts in here (within the clinic) and stacks of charts outside (at the front desk) too, with people going through them looking for charts while patients waited in the waiting room to come back here to the clinic."

To make the flow more efficient, staff created a pre-plan for patients' next visits, so staff know and communicate to others which patients needed eye dilation. This assures that such patients are seen before their dilation wears off. In addition, "To eliminate the rework we revised the clinic note," said Anaya. "We added a section for the next clinic appointment." This allows the doctor to pre-order dilation so when the patient returns to the clinic the staff knows the plan for the visit. Anaya indicated that the changes, along with other patient flow improvements, "eliminated dilation rework."

## Sustaining Changes

Ophthalmology clinic staff now hold weekly meetings to sustain and continue improvements. One of their important tools is a carefully maintained display board of quality metrics. In addition to enabling the staff to track quality measures, the meetings and quality metrics enable staff to discuss ideas for improvement and to track improvement projects to make sure tasks are being accomplished. The meetings are very interactive," noted Prasad. "We are constantly re-evaluating where we are and we're constantly looking for ways to improve our delivery of care.

The clinic's early successes in implementing Lean were summarized by Valerie Rodgers Owens, RN, the ambulatory care nurse manager: "In a short period of time we have been able to improve our cycle time (from the time patients check in to the clinic to when they are discharged by the nurse) by nearly 50%." The staff has also been able to double the number of new patients seen, which improves access to the specialty clinic.

In addition, staff members — who often used to work until 8:30 or even 10 o'clock at night seeing patients — are now leaving on time more often. "We are now able to see our patients during the allotted clinic time," said Owens. "The camaraderie and teamwork have been wonderful. The morale of the staff is obviously improved," she said. "Even people we thought might not have obviously embraced the process have now truly embraced it."

Notably, the majority of these changes were made prior to implementation of Harbor's new electronic health record late in 2014. "We are now in the process of re-evaluating the Lean-inspired process modifications in light of the impact the electronic record has had with respect to patient flow," said Dennis Levin, MD, associate medical director, ambulatory care.

*"The changes that we have made in our eye clinic are not just small changes in efficiency here or there, which have allowed us to see more patients. The foundation for all of the change we have made is really a cultural change, it's a change in the mindset of how we approach our work…we have everyone involved and everybody on the same page."*

— Pradeep Prasad, MD
Chief, Ophthalmology

# Using a Lean Value Stream to Transform Inpatient Acute Psychiatry Services at San Mateo Medical Center

## Background

Ward 3AB at the San Mateo Medical Center (SMMC) is the place where county residents who are experiencing a psychiatric crisis are brought by family, friends, or, very frequently, by police. Many are actively psychotic, and some must be admitted against their will on a psychiatric hold. Significant numbers are homeless, unbefriended, and not fluent in English. Patients are first seen in Psychiatric Emergency Services and, if their condition is sufficiently severe, they are admitted to Ward 3AB to be stabilized, assessed, and discharged to appropriate care for longer-term recovery.

Simply maintaining a calm status quo on this ward is challenging, let alone undertaking an improvement process. But in the fall of 2011, staff felt very dissatisfied with the status quo and committed to using Lean methods to initiate a process of change with a goal of providing "The Right Care in the Right Place at the Right Time."

SMMC staff has been using Lean to improve acute inpatient psychiatry for over three years. "Lean," explained Liz Evans, RN, deputy director of psychiatry, "creates a framework and a discipline for sustaining change." Lean activities are coordinated through the LEAP Institute (Learn, Engage, Aspire, Perfect) at SMMC.[9]

## Value Stream Mapping

To kick off Lean for Ward 3AB, Evans and SMMC CEO Susan Ehrlich, MD, convened stakeholders to create a Value Stream map. The map became a shared guide to the steps through which improvements would be addressed. It identified two primary lines of improvement work for Ward 3AB: patient experience and patient flow.

Both SMMC and Lean place an emphasis on using patient experience to guide changes. Therefore a priority was put on assessing and improving the experiences of patients on Ward 3AB from first contact with Psychiatric Emergency Services (PES) through discharge.

The stakeholders noted that over a period of 20 years, Ward 3AB experienced a slow increase in the number of unbillable "administrative days" when patients are no longer acutely ill but have not yet been discharged. They conjectured that the causes included a lack of communication among staff; insufficient capacity to track patient progress; inability to get all the parties who have input into discharge decisions on the same page in a timely way; and lack of available beds.

In addition to unbilled or unbillable days, other areas of waste that were identified included lack of organization around patient flow, and cumbersome handoffs among providers both on and off the ward. Wasted time resulting from these inefficiencies, the leadership group realized, could be redirected to improving the experiences of patients on the service.

The Value Stream map kicked off five different Kaizen events — weeklong efforts each focused on improving one link in the chain of improvements the Value Stream aimed to accomplish.

## Two Rounds of Kaizen Events

In the three-plus years since the Ward 3AB Value Stream was initiated, staff have operationalized successes from the five original Kaizens, including:

➤ Improving patient experience by creating more privacy, minimizing the visibility of police and security officers; involving patients more in their treatment plans; increasing choice for patients; providing a complete picture of the day's available group activities; developing an interactive treatment-planning tool that focuses on patients' strengths and their own identified treatment goals to increase their participation in the process; and making the ward more physically attractive.

➤ Improving patient flow by creating a real-time visual communication and coordination tool that displays key components of patients' discharge plans and status that is easily discernible by color.

After the bursts of energy from these Kaizens and innovations, the change process was not allowed to lose momentum. "After 18 months, we revisited the whole Value Stream," said Evans. "We revised the targets, revised the implementation plan, and planned five more

Kaizen events." The later Kaizens focused on internal flow management and safety. A "pull system" was created for managing referrals to one of the important step-down facilities used by SMMC. Achievements included:

► Developing Standard Work to track daily discharge planning activities and the status of patients, including those who have been accepted to a facility and are waiting for a bed to open.

► Creating a more efficient process for transfers to a step-down facility. Before the Kaizen, ascertaining whether a bed was available required faxing 40 pages of material about the patient and an additional five-page referral form that took the social worker over an hour to complete. The Kaizen resulted in making already existing electronic charts available to the facility in lieu of the faxes, and eliminating the duplicative referral forms.

► Creating a spreadsheet that, according to Evans, is "simple and revolutionary." This shared spreadsheet, updated daily, shows available beds throughout SMMC.

## From Event-Based Improvement to Standard Work

A challenge for staff was the transition from the high energy, high focus, Kaizens — during which changes are identified — to the work of maintaining the changes over time. The improvements must be captured for the long-term in Standard Work, one of the fundamental building blocks for Lean sustainability.

CEO Ehrlich explained why this is so important. "Standard Work is the best way of doing something, and there is a time metric attached to it. It's what everyone reliably does. The closest thing we have to it in traditional health care is policies and procedures. Standard Work is different because it is very focused, very methodical, and specific to the person. The steps are timed and they are very visible in the organization. It's routinely checked — we have weekly meetings to see if it's validated." Without a standard, she added "You don't know whether you are improving."

Maintaining Standard Work requires that innovations be sustained until they become the new normal. Kelsey Dattilo, a social worker for Ward 3AB, described the process of developing and maintaining Standard Work

in discharge planning: "During the Kaizen, we went to the *gemba,* breaking into groups to observe actual processes in the unit as they are ordinarily done, watching social workers do referrals. We looked for areas of waste. Groups observed different aspects, and we came back together and talked about what we observed. . . each group came up with three ideas to eliminate waste."

They wrote down the steps of how it should be done ideally, and went back to the workplace to test it and see if it was realistic. Then it became Standard Work that everyone was trained to do. Finally, the Standard Work was validated at 30, 60, and 90 days by having a supervisor or department member observing how the work was done and making sure it was still effective.

The process of change created a very positive *esprit de corps.* Liz Evans explained, "By asking why we do things the way we do, the change process can reconnect people with their basic motivations, like improving health outcomes for our patients, which is why many people are in health care in the first place."

Evans also noted that, in order to counter resistance, "It's important to figure out in advance who needs to be involved from the beginning of some change processes." Staff turnover can also be a concern. For example, Ward 3AB's shortage of psychiatrists necessitates the use of temporary or per diem psychiatrists. "It is difficult to train them in Standard Work," explained Evans, "and even more challenging to have them feel aligned with our improvement journey."

## Changing the Way Leaders Lead

Leaders at all levels of the health system need to continually reinforce the importance of Standard Work, and to practice Leader Standard Work themselves. This can be difficult, explained Sandra Santana-Mora, deputy director of the LEAP Institute. "When leaders have all of their other operational duties, they feel that they do not have enough time to validate Standard Work."

Ehrlich described the importance of Leader Standard Work: "We did a pretty good job of getting people trained, especially leaders. We were able to get Value Streams and Kaizen events up and running; but sustaining the gains was entirely dependent on individuals and culture. It was directly related to the leader and how invested they are in the work. If you don't have all the leaders engaged — in the boat, rowing in the same

direction — there is no hope. It also requires a commitment from all leaders in the executive suite. This is not work that can be delegated. If I look back, we could have engaged in more Leader Standard Work earlier. Seeing that all of our work could fall apart without Leader Standard Work pushed us to the next level. It is a very big lift, a 10-year process. We know this from other sites that have successfully made the transition to using Lean throughout their health systems."

Leaders and other stakeholders are supported by the Lean practice of posting and frequently visiting metric boards with various goals and progress metrics displayed. These are called visibility boards. The SMMC executive team and representatives from the LEAP Institute visit weekly to view progress. "It has to be an obsession to engage in humble inquiry," explained CEO Ehrlich. Other stakeholders including the unit medical director, social workers, the utilization manager, and staff physicians also visit the visibility boards weekly.

## The Big Picture

When hundreds of units of change are occurring in dozens of locations throughout a large health system, it is challenging for the leaders to maintain a focus on all the areas of change. SMMC's leadership employed a Lean process — *Hoshin Kanri* — to align their improvement efforts with the strategic directions of the health system. It is a method of identifying, solidifying, and deploying strategic goals. By using Hoshin Kanri, Ehrlich said, "We consolidated over 40 areas of change occurring throughout the health system to under 10." One of these prioritized areas is improving patient flow throughout SMMC.

In Ward 3AB, the various stakeholders have different perspectives on their accomplishments to date. Nancy Wilson, a patient representative, pointed to improvements in client care. She said the discharge planning process has empowered her and her colleagues to be problem solvers. Physicians have changed the hours they work in order to be in better communication with other staff. Many staff members pointed to increased knowledge that results from new methods of visual communication such as visibility boards.

Evans noted that Ward 3AB's administrative days have not been brought down to target levels (from 54% to 28%), although the work helped isolate the most important causal factor — lack of available beds. "I don't feel we have a huge achievement," she acknowledged, "but I am happy that the health system recognizes that the administrative days issue is a systems issue; it sheds light on the pain points." She also pointed out that for discrete pieces of work, like social work documentation, they have developed the necessary skills to follow metrics and make sure everyone is validated. "We are slowly learning the tools and embedding the structures that help us hold onto the improvements we are making," she said. "Now I want to spread that to the whole nursing staff."

Despite the distance still to go in terms of targets, SMMC's experience in Ward 3AB "shows how persistent implementation of a Value Stream over a substantial period of time — three years — has transformed inpatient acute psychiatry services," said Evans. Viral Mehta, director of the LEAP Institute, added, "In Lean we are not aiming for 'perfect' as an adjective but rather the verb 'to perfect,' which is something we aim for in our everyday work."

## Endnotes

1. The Section 1115 Bridge to Reform Waiver was approved by the Centers for Medicare and Medicaid Services (CMS) to help California public hospitals prepare for health reform. The Delivery System Reform Incentive Payment or DSRIP portion of this waiver pays hospitals for meeting system improvement benchmarks.

2. For more information about Lean, see: Liker, Jeffrey, *The Toyota Way,* New York, McGraw-Hill, 2004.

3. Getting Lean: A Journey Toward Better Health Care, California HealthCare Foundation (December 2013), www.chcf.org.

4. The "black belt" designation indicates a high level of expertise in Lean and/or Six Sigma methods. Six Sigma is a process improvement approach that emphasizes statistics to identify and remove the causes of defects. It was developed by Motorola.

5. Rona's principals had Lean leadership experience at Virginia Mason Medical Center.

6. Sections 5150 and 5152 of the California Welfare and Institutions Code authorize involuntary treatment for people experiencing a psychiatric emergency when they are a danger to themselves or others.

7. Some of the work designing the FastTrack began before Lean was introduced to AHS.

8. Eye Clinic iMovie, Harbor UCLA Kaizen, www.youtube.com.

9. Formerly called the Kaizen Program Office.