

For Riverside Medical Center, “Lean is not just about better ROI; it’s actually fundamentally about better patient care.”

Faced with making cuts to an already “bare bones” operation in the lab at Riverside Medical Center in Kankakee, Illinois, hospital administrators turned to a Lean initiative to improve quality and reduce costs. What they discovered along the way is that managing with Lean holds the potential to benefit Riverside throughout the entire hospital.

Located in a rural community about 60 miles south of Chicago, Riverside is a 336-bed facility challenged by the same market pressures as other U.S. hospitals: rising costs, declining reimbursements, and limited resources. In the case of Riverside’s lab, CEO Phil Kambic explained, “lab costs were skyrocketing, supply chain costs were increasing, performance was degrading in terms of turnaround times, and the Emergency Department (ED) was complaining.”

Kambic and other administrators realized “we needed outside help” to address the lab’s problems, and in July 2006, a team from Ortho-Clinical Diagnostics’ ValuMetrix Services was engaged for a Lean initiative. That Process Excellence initiative would yield impressive results, but at the time, Kambic was uncertain about the outcome.

Not just another ‘management fad’

With more than two decades of experience at Riverside, including seven years as COO, he explained that the hospital had been through “a lot of different management fads” over the years, and some of those consultant-driven exercises were not successful. Although he was sold on the “sound management principles behind Lean, the fact that ValuMetrix presented a good case, and they had the competency to help us achieve our goals,” he added, “to be honest, from my standpoint as CEO, I was skeptical.”

Applying Lean’s sound management principles — a systematic approach to streamlining workflow, eliminating waste, better organizing supplies, and using metrics to measure success — came not a moment too soon for Riverside’s lab because, according to the lab’s Administrative Director Stephanie Mitchell, “I was out of solutions.”

“Hospital-wide cost-cutting measures in 2002 had left the lab with less staff and more work. The lab’s current staff of 50 full-time and part-time technicians and assistants produce about 700,000 billable tests a year, and volume is increasing by about 5 percent annually,” Mitchell said. “Every year we would get fewer FTEs and add volume.”

To control costs, Mitchell implemented every process improvement she could think of. Lab volumes were tracked by hour of day and staffing was cut during low-volume periods. “Office days,” where techs were given time away from the lab to handle administrative chores, were eliminated. Schedules were adjusted so there was no overlap of staff between shifts, and sending people home early when volumes were low increased involuntary time off. Daily shifts were cut to 7.5 hours, which reduced the possibility of overtime — “not a staff satisfier,” Mitchell noted.

“Those were the last things I did before I couldn’t do anything else,” she said. “This was at the very end, right before we went to Lean.”

LEAN CASE STUDY

Wanted: Practical solutions to real problems

After the hospital experienced a particularly difficult financial quarter in 2005, Dr. Mark Pool, medical director of the lab, knew there would be a mandate to initiate further cuts the lab could ill afford to make. Dr. Pool had been reading about Lean principles and suggested that Mitchell explore a Lean initiative in the lab. When he further suggested that Lean was primarily about improving quality, Mitchell remembers thinking, “How can we improve quality when we are just trying to keep our heads above water?”

But she attended a ValuMetrix seminar in Chicago in November 2005 and discovered that other hospital labs that had embraced Lean “were people like us — no money, no staff.” The fact that other labs had gotten “practical solutions to problems” made Mitchell hopeful and, after conducting research and looking at other consultants, she concluded that ValuMetrix would be the best fit for Riverside because of the organization’s successful track record and because ValuMetrix originated from a lab setting.

“I wanted somebody that knew labs,” Mitchell said.

Improving quality while controlling costs

When she and Dr. Pool made a presentation to Kambic and other members of Riverside’s leadership team, they approached “Leaning” the lab as a way to improve quality as well as controlling costs.

“I don’t think this institution is unique,” Dr. Pool said. “It is primarily driven by financials. The job of the financial people is to look at numbers, to keep the hospital solvent. I understand that. My job is to bring them the clinical piece of it, to show how important the clinical piece is to quality and patient safety.”

Dr. Pool noted that for some non-physician administrators, “the lab is basically like a commodity,” and they want to see ROI and other financial projections, which ValuMetrix provided. But at the end of the day, he added, “Lean is not just about better ROI; it’s actually fundamentally about better patient care.”

Bill Douglas, Riverside’s CFO, couldn’t agree more. “Here’s the thing on Lean,” he said: “It’s a quality initiative. It isn’t a cost-cutting initiative. But the end result is, if you improve quality your costs will go down. If you focus on patient quality and safety, you just can’t go wrong. The idea is, you do the right thing with regard to quality and the costs will take care of themselves.”

Lab turnaround time improved by as much as 50 percent

Calculating the direct financial impact of the lab’s Lean initiative is difficult, Douglas said, but the benefits are unquestionably there. For example, the lab’s turnaround times to the ED have improved dramatically, in some cases by as much as 50 percent. That means the ED can now see more patients, because throughput is improved and patients spend less time in waiting rooms.

Such gains in efficiencies also avoid capital improvement costs. There had been discussion, Douglas said, about a \$2 million expansion of the ED that is now no longer under consideration.

Such “halo effects” are not exclusively the result of the lab’s Lean initiative, but the lab has been a significant contributor, Douglas said. “Because if the physicians can’t get their lab reports, they can’t act.”

Douglas underscored his point with statistics. Last year at Riverside, inpatient length of stay was down by four-tenths of a day at the same time inpatient admissions were up 8 percent, ED admissions were up 10 percent and outpatient volume was up 6 percent. “And my overall costs from ’05 to ’06 went up less than 1 percent,” he said. “My costs were basically flat.”

A variety of factors contributed to those statistics, he added, but “it’s all related to patient quality. And by the way, my patient satisfaction scores have never been higher.” The bottom line, Douglas said, is that it makes good financial sense to adopt a system like Lean, which focuses on eliminating waste and improving quality. “To me, it’s a no-brainer.”

“...my patient satisfaction scores have never been higher.”

With the positive experience of Lean in the lab, CEO Kambic next plans to apply Lean management to the hospital's pharmacy and has engaged ValuMetrix in that effort. He also sees the enterprise potential for Lean. "One of my goals is to work with the senior leadership team to develop a three-year plan to prioritize how they want to roll out other Lean initiatives in the hospital," he said.

The importance of building a Lean team of hospital staff

Fundamental to the ValuMetrix Process Excellence approach is to build a Lean team of hospital staff so that Lean processes can be sustained after the consultants leave. At Riverside, the lab's Lean team consisted of two med techs, one pharmacy tech, one lab assistant supervisor, and an administrative assistant who worked half-time.

For 14 weeks from July 2006 through early October, the team devoted 100 percent of its time to the Lean implementation process. ValuMetrix consultants were onsite for ten of those 14 weeks, providing extensive training and leading a current-state analysis in the lab, which found that the existing lab layout and processes drove wasted motion and delayed turnaround times.

The ValuMetrix approach worked so well, according to Dr. John Jurica, Riverside's vice president of medical affairs, "because you have a team that is committed to it full time for a period of weeks. They did present-state knowledge and took the time for a thorough analysis. Often, people assume they know their own problems, so you don't take a critical look at mapping out the problems."

What the Lean team found

Among the Lean team's findings:

- Isolated islands in the lab were organized inefficiently by departments such as hematology and chemistry, causing techs to walk back and forth to perform tests, which resulted in wasted motion and delayed turnaround times.
- Batching of specimens by phlebotomists and batching in the specimen processing area needed improved focus on flow to avoid bottlenecks.
- Workspaces and inventory storage were unorganized.
- There was a lack of "standard work" — techs had their own individual ways of performing tests, which added to inefficiency.
- No metrics were posted so that lab staff could visually see the results of their performance.

The team designed a new layout for the lab, focusing on reducing waste, introducing standard work in multiple areas, and implementing a visual system for organizing and reordering supplies. The "core cell" layout was put in place October 11, 2006.

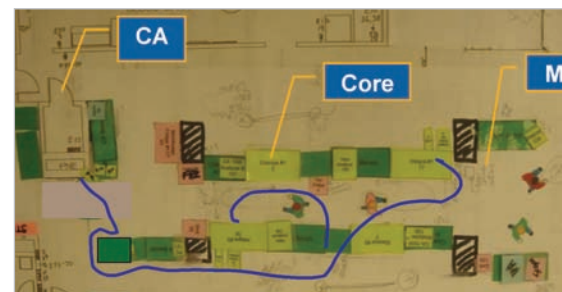
Janika Baki, a Riverside med tech and member of the Lean team, didn't know much about Lean before joining the team, and had her doubts about how well it would work during the team's "paperwork analysis."

It wasn't until "we got down to the dirty stuff," she said, "moving instruments around and putting everything in place," that she started to understand how standard work and the new core cell layout could eliminate waste and reduce turnaround times.

New layout saves space, eliminates wasted motion

Space savings was an additional benefit. Prior to Lean, the lab was "busting at the seams," Dr. Jurica said, and there had been discussion for at least two years of moving the lab into larger quarters. Post -Lean, that is no longer necessary, because the new core design actually freed up 228 square feet of space.

The new design also eliminated wasted motion. Specimen travel distance for chemistry tests was reduced by 54 percent, from a distance of 146 feet to 67 feet. And hematology techs' walking distance per hour was estimated to decrease by more than half.



“Lean freed up people to look at new ways to improve patient care.”

In addition to gaining physical space, there was also an increase in “mental space,” Dr. Pool explained. “Lean freed up people to look at new ways to improve patient care.” Before Lean, he said, “We really had a colossal difficulty having time to look at data to see how we could improve our processes. All our staff had time to do was crank out the daily work.”

The lab recently collected data on urinalysis and how some microscopic exams could be reduced in that area, Dr. Pool said. “We couldn’t even contemplate doing that a year ago, because nobody had time.”

For Mitchell, the biggest impact of Lean has been the reduction in turnaround times. In June 2006, for example, the average turnaround time for an inpatient potassium test was 74 minutes. By January 2007, about three months after Lean implementation, that time had been shortened to 40 minutes, a reduction of almost 46 percent. Troponin tests for the ED had averaged 54 minutes in June 2006 and were cut to 34 minutes by January 2007, a 37 percent reduction.

When Lean was first implemented in October, the percentage of lab test results available on doctors’ charts by 7 a.m. was 62 percent. After Lean implementation, between November 2006 and January 2007, that average increased to 85 percent.

Measurable quality improvement

“We have improved our quality,” Mitchell said, “and we can measure that improvement.” She conducts daily audits of lab processes, and metrics are posted daily so staff can see how well they have done, or, if problems occurred, what went wrong.

Metrics are an essential part of the Lean process, because as CEO Kambic and other hospital administrators point out, “you can’t manage what you don’t measure.”

Still, measurable tools and proven processes by themselves are no guarantees of success, Dr. Jurica noted. “There is always the issue of follow-through operationally. You can have a good theoretical construct, but actually making it happen is another story.”

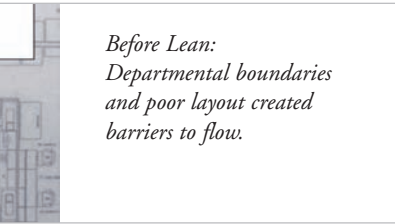
Two other keys to success: leadership and buy-in

That is where two other critical factors in the lab’s Lean initiative came into play: leadership and buy-in. For Lean to be successful, an organization needs a few “true believers” to take ownership of the process, Dr. Pool said. At Riverside, one of those true believers was Mitchell. Her commitment and enthusiasm helped persuade hospital senior management to go forward with the project even though it was a costly undertaking.

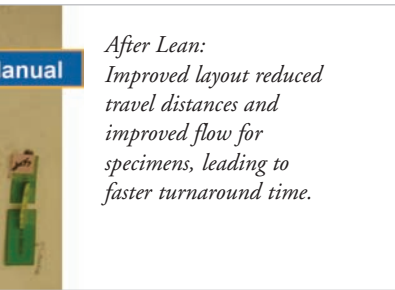
An engagement of this scale, CFO Douglas explained, “is not an easy thing to do. There is a lot of work, there are ups and downs,” and there is the initial expense. He estimated that with staff time, consulting fees, and physical plant improvements, the lab’s Lean initiative cost about \$300,000.

But when we found someone in the organization who was willing to take ownership of the project,” Douglas said, “it was easier on the executive level to fund it. The CFO and the CEO can put their weight behind it and take care of roadblocks, but they can’t own it. You need that person who says they will see it through.”

In the lab itself, buy-in and ownership was also critical — and more complicated — because in addition to asking longtime employees to change the way they had been doing their work for many years, there was the unfounded but real fear that the initiative would eliminate jobs. Initially, Dr. Pool said, people at all levels of the hospital were skeptical of the Lean initiative, but particularly in the lab, many thought it was “just another administration-driven novelty act on how to cut more people.”



*Before Lean:
Departmental boundaries
and poor layout created
barriers to flow.*



annual
*After Lean:
Improved layout reduced
travel distances and
improved flow for
specimens, leading to
faster turnaround time.*

But because of the leadership shown by Mitchell and the Lean team, and the ability of ValuMetrix to communicate the vision of Lean management as a long-term commitment to quality, “the tide has changed,” Dr. Pool said. Mitchell estimated that as of February 2007, about four months after Lean implementation, “we have about 90 percent buy-in in the core part of the lab.”

She is aware, however, that staff resistance could still undercut the Lean effort. “Change is hard,” Mitchell said. And moving to standard work, where techs who were accustomed to operating in one particular area now have to learn multiple processes and skills, can make longtime employees resistant.

Every improvement ‘means better patient care’

Managing in a Lean way means that you never achieve perfection, because there are always challenges and new processes that require streamlining. “You never get to Lean nirvana,” Dr. Pool said, “but we’re on the road there.” What is important to remember, he added, is that every improvement in the lab “means better patient care.”

Nowhere is that more evident than in the ED, one of the lab’s key customers.

Turnaround times “are definitely faster. All the docs agree.”

Prior to Lean, Mitchell said, “we weren’t able to give the ED the service they needed to get.” In fact, the ED had begun experimenting doing its own point-of-care service for troponin tests and arterial blood gases, according to Dr. Steven Decker, chairman of Riverside’s Department of Emergency Medicine.

“To have an expectation that I would get a cardiac panel back to my patients in an hour from the lab,” he said, “it just wasn’t going to happen.” Proper turnaround times for arterial blood gas tests are ten to 15 minutes, and the lab was “not even close to that.” Lab services could sometimes take so long, he said, “that to be perfectly honest, there were times I had forgotten I had ordered a test.”

Since Lean implementation, Dr. Decker said, turnaround times “are definitely faster. All the docs agree.”

The ED uses an electronic tracker board to chart patients and their records. Lab data is electronically fed into the system, and when a test comes back from the lab, an electronic check mark appears on the board. Dr. Decker said there are occasions now when that check mark pops up so quickly that “the lab is no longer the rate-limiting step in the process.”

Providing the tools to improve quality

Dr. Decker and Mitchell acknowledge that there are still issues to work out between the lab and ED, but Dr. Decker has seen improvements and the possibility for much more improvement. “If the days when things come back amazingly fast are any indication of the potential of what this process holds,” he said, “then it’s going to be ridiculously fast.”

“We weren’t terrible before,” Mitchell said of the lab’s relationship with ED, “but now they can depend on us.” And Lean is the reason. Process Excellence provided the tools to address the lab’s issues, she said, “at a time when we didn’t know what else to do, and nobody else at the hospital knew what to do, either.”

“Labs and other hospital departments are continually being asked to reduce costs, insurance reimbursements may be reduced, and labs are continuing to run out of space. To improve quality in the face of those things Lean is the answer,” Mitchell said. “Lean gives you measurable tools to improve quality on a daily basis.”

SNAPSHOT

Client

- Riverside Medical Center, Kankakee, Illinois (60 miles south of Chicago)

Vitals

- 336 bed hospital
- Rush University Medical Center Affiliation
- 19 Community Health Centers and Physician Practice Locations
- 50 FTE/PTE lab technicians
- 700,000 billable tests per year (and increasing at a rate of 5% annually)

Project Goal

- Increase financial performance (lower costs, raise productivity)
- Shorten turnaround times for test results
- Improve quality

Process

A full-time Lean team conducted a thorough current-state analysis. It identified inefficient lab layout, batching of specimens by phlebotomists and in specimen processing, variability in job performance, unorganized inventory and workspace, and lack of performance measures as key drivers of waste. The team redesigned the lab with a new core cell, implemented a visual system for organizing and ordering supplies, and introduced standard work procedures. It also put into practice daily audits of lab processes including posting of metrics so, if problems occur, measures can be taken to address them quickly.

Results

- Average turnaround time for inpatient potassium fell from 74 minutes to 40 minutes, a 46% improvement.
- Troponin tests for the ED dropped 54 minutes to 34 minutes, a 34% increase in turnaround time.
- The percentage of results on charts by 7 AM improved from 64% to 85%
- The lab's floor space requirements were reduced by 225 square feet; and plans for moving the lab into larger quarters were deemed unnecessary.
- Lab turnaround time improvements of as much as 50% allowed the ED to see more patients because of improved throughput and shorter times for patients in the waiting room. These efficiencies eliminated discussion of an ED expansion and avoided the need for a \$2 million capital improvement.

Response

“Lean is a quality initiative. It isn't a cost-cutting initiative. But the end result is, if you improve quality your costs will go down. If you focus on patient quality and safety, you just can't go wrong. The idea is, you do the right thing with regard to quality and the costs will take care of themselves.”

Bill Douglas, CFO
Riverside Medical Center
Kankakee, Illinois

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