

Leading the way with LEAN

Avera McKennan streamlines health care while improving quality

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Hospitals face an increasingly challenging and competitive environment. At the same time that advancing technology and increasing expenses are driving costs higher, private insurance companies and government payors seek to cut reimbursement.

As government grapples with health care on a national level, can individual hospitals do anything to turn the tide? Avera McKennan leaders believe part of the solution is streamlining processes and eliminating waste to provide care that is not only efficient, but patient-centered.

Since 2004, Avera McKennan has

been implementing LEAN projects based on the principles of the Toyota Production System, saving millions of dollars in construction costs, human resources and supply expense.

As the Joint Commission relates, an estimated 30 to 40 cents of every health care dollar is spent on waste – that is, on activities that add no value to patient care.

“It’s absolutely essential that we are efficient with our patients’ resources while giving them high quality, evidence-based care. We can do no less,” said Fred Slunecka, regional president of Avera McKennan.

A journey toward excellence

LEAN was piloted in the Avera McKennan laboratory in 2004. At the time, the lab was better than the national average, having an accuracy rate of 98 percent. Still, a major upgrade was needed to deal with increasing test volumes.

The LEAN project greatly improved accuracy to about 70 errors per 1 million tests – a 99.99993% accuracy rate. Average turnaround time improved by 44% from 62 minutes to 35. Productivity improved by 14%, and the project saved 1,000 square feet in space requirements. The lab increased its

Women’s Center features LEAN design



Avera McKennan’s new Women’s Center addition is not only beautifully decorated with a number of luxurious features, it has a LEAN design which makes providing excellent patient care that much easier for physicians and nurses.

LEAN has been the center of Avera McKennan’s Process Excellence initiative since 2004, and so whenever a new construction or remodeling project comes along, LEAN principles are applied. The new Women’s Center addition on 4th floor of the hospital is no exception.

The Women’s Center was designed to make the experience of childbirth the best it can be. The 24 private suites feature oversized beds, flat-screen televisions and whirlpool bathtubs.

Spa services are an extra touch to help women feel especially pampered and comforted.

Dads can relax in a comfortable “Dad’s Den,” which has an adjacent children’s play area. A café with a full buffet line is an added convenience for family mealtime.

Sheryl Smith, RN, was among Women’s Center staff on the LEAN design team for the new unit. The center is arranged in pods, as are other patient units on lower floors at Avera McKennan. However, instead of one central nurses’ station for the entire unit, each pod has its own station with its own medication center. Supplies are kept at the point of use – in patient rooms.

A state-of-the-art nursery was also designed with LEAN principles in mind.

“The design is a very centralized work area, and keeps nurses in that one pod,” Smith said. Nurses spend more time caring for patients and less time walking down hallways or going after supplies. “The design decreases traffic flow, so the unit has a quieter, calmer environment,” Smith added.

The Women’s Center has traditionally had high patient satisfaction scores on Press Ganey surveys, and those scores continue to soar to the 90th percentile and above. More prospective parents are choosing Avera than ever before – deliveries at Avera McKennan have increased 13% since the new addition opened.

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capacity by 75%, so it could process more tests per day without adding staff. After this resounding success, LEAN principles became the center of Avera McKennan's journey toward process excellence. LEAN principles have guided employee teams to increase the level of service, quality and efficiency in many areas, including the Women's Center, hospital nursing units, laboratory, Emergency Department, pharmacy, surgery, Patient Financial Services, clinics and more.

The patient at the center

Because LEAN principles begin with the needs of the patient, LEAN created a bridge between Process Excellence and Avera McKennan's second major initiative, Service Excellence.

While LEAN does save money, better patient care is the top benefit in health care, said Kathy Maass, Avera McKennan director of Process Excellence. The goal is a seamless patient experience, marked by great service, quality care and efficiency.

"The true benefit of implementing LEAN is to see everything we do on a day-to-day basis from the eyes of a patient. The patient then becomes the center of our focus," Maass said.

Judy Blauwet, senior vice president for Hospital Operations at Avera McKennan, said LEAN translates into clinical excellence and patient safety. "We want our safety to be as high as possible, our outcomes to be the best possible, and our costs to be as low as possible."

Standard work principles decrease opportunities for medication errors, infections or complications. "That's extremely important for our patients and their families," Blauwet said. More efficient room layouts and point-of-use supply storage allows nurses to spend more time at the bedside, and answer call lights more quickly.

"LEAN is about examining the patient care process step by step, and redesigning it around the patient to eliminate waste. Employees become involved in the solution at the most grass-roots level," Slunicka said.

Improvements come from the people who are actually doing the work, and this empowers employees to use their own ingenuity and creativity to make their workplace better.

'First Cycle of Care' benefits caregivers, patients



"Too much work and too little time." This was the dilemma faced by nurses on 1East at Avera McKennan as they tried to meet expectations of physicians, patients and regulatory agencies within a short two-hour timeframe at the beginning of each shift.

"The nurses felt there weren't enough hours in the day – that they were always starting out behind and playing catch-up all day. Nurses were providing the needed care, but there was not a lot of time for anything else," said Jamie Vickery, RN on 1East, a medical floor that primarily cares for cardiac and pulmonary patients.

A videotape analysis revealed that nurses were spending an average of 27 minutes per patient doing the initial cycle of assessments and

delivering medications. Because nurses care for an average of four to five patients in one shift, the last patients weren't being seen by a nurse for up to two hours into the day. Then, at the end of their shift, nurses had to go back and document care in the patient's medical record.

On paper, the LEAN team was able to streamline assessment and medication time from 27 minutes to 18.9 minutes, said Todd Townsend, RN and Process Excellence consultant. But nurses still couldn't get to their last patient until an hour and 20 minutes into their shift.

So the LEAN team designed a new "First Cycle of Care" that divides assessment and medication delivery into two nurse visits. Nurses spend the first hour of their shift doing initial assessments. They then spend the second hour delivering medications. As they spend time with patients, they do "real time documentation" on computer terminals in the patient rooms.

The new process means patients are seeing the nurse each morning sooner, no later on average than 8:25 a.m. compared to 9:09 a.m. before.

Yet nurses are able to stay within a two-hour timeframe, going in to see their last patient for the second time by an average time of 9:18 a.m. to deliver medications.

More than 90% of staff noted improvement in their delivery of care. End of shift hours have been reduced by 63%, from an average of 1.1 per nurse to 0.4.

Francie Miller, assistant vice president for Emergency and Adult Specialty Services, said nurses are still doing the same amount of work, in a shorter amount of time and in two visits instead of one, while greatly reducing end-of-shift work. "We've just turned it around so it's easier for the care provider and best for the patient."

Tony Dreyer, 1E nurse manager, agreed. "This has helped nurses dramatically in their delivery of care, and how patients view what we do for them every day."

Thinking LEAN

“Now that LEAN is over five years old at Avera McKennan, people are starting to think process,” Maass said. “When problems exist, employees recognize that if we can improve the process, we can improve the outcome.”

“LEAN now pervades our thinking,” Maass added. LEAN is a driving force in the design of construction or remodeling projects, such as Avera McKennan’s new Emergency Department, Women’s Center, and clinic at 69th and Western.

A LEAN steering committee identifies potential projects, based on Avera McKennan’s strategic plan, or any identified concerns surrounding efficiency, safety or quality of care. LEAN projects may develop out of “Bright Ideas,” Avera McKennan’s employee suggestion program. Assessments of labor productivity through Premier Operations Advisor is another tool for identifying LEAN project opportunities.

A Process Excellence staff of four is specially trained to lead LEAN projects. These staff have experience in a number of hospital departments, and some transferred to full-time Process Excellence work after being part of a LEAN project in their previous department.

When a potential LEAN project is identified, a team is formed to include a Process Excellence staff member and front-line employees of that department. “We take the steps necessary to free these employees up for 10 to 16 weeks, so they can devote themselves completely to the LEAN project,” Slunecka said.

Teams begin their work by gathering data. They videotape all processes within their department, and then analyze them minute by minute. The goal is to find value-added activity – that is, activities which provide care to the patient and are done correctly the first time. The team communicates daily with staff, and engages other employees in problem-solving sessions.

The LEAN team analysis may seem detailed, if not painstaking to some. Teams create charts and graphs, noting what processes are done when, and how the work flow is balanced throughout the day. They count the number of steps that nurses or patient care technicians take. They note the number of seconds that callers are placed on hold. They document the amount of inventory in storage.



LEAN streamlines mammography

With more calls for mammography than any other test, the Avera Breast Center and Avera McKennan Imaging Center staff wanted to make

sure they were getting as many women in for this vital screening, as soon as possible without wasted time spent registering or waiting.

“We videotaped the entire process, from the time the call is made for an appointment until the time the patient walks into the procedure room,” said Doreen Hardy, RN, and Process Excellence consultant.

Efficiencies were found throughout the process, from registration to the actual exam. For example, in the past, one staff member registered a patient, while another entered the order. Now, orders are entered when the appointment is made. So there is one less step in the patient’s registration process.

Then, instead of taking a seat in the waiting room after registering, patients are met immediately by a volunteer who escorts them to a dressing room.

Dressing rooms were revamped with extra gowns and supplies at point of use to make things more convenient for patients and the volunteers who assist them.

A patient questionnaire which was previously given at registration was moved back to the exam area, where patients would have enhanced privacy, and technologists could answer any questions.

A new wall monitor allows technologists to see at a glance which patients have registered, to better track any wait time.

Jill Schultz, breast health manager at Avera McKennan, said the LEAN project has shortened the time span from the patient’s arrival until they reach the exam room from 40 minutes to 12. The patient wait time in registration alone decreased from 20 minutes to four.

Streamlining of patient flow, and heightened communication between mammography staff and schedulers has led to increased availability of appointments, Schultz said.

This is especially important for diagnostic mammograms, ultrasounds or needle biopsies, which may be needed when the radiologist sees an area of concern on a screening mammogram that needs to be rechecked. While 80 percent of these diagnostic tests turn out as benign, it’s an emotional, fearful and uncertain time for patients.

“Before the project started, we had a waiting time of six to nine days for diagnostic tests. Now, it’s around two days to get into an available appointment. Our goal is to keep it within five working days,” Schultz said.

“We’re working on Service Excellence tactics to make our center more welcoming and improve the entire patient experience, not only at the Avera Breast Center but throughout the Avera McKennan Imaging Center,” she added.

Teams go through a 5-S initiative: Sort, set in order, shine, standardize and sustain.

When waste is identified, such as waiting, transporting or handling inventory, the team engages in problem-solving sessions to come up with a better way.

Successful tactics have included bedside carts, containing all supplies needed for the most common procedures so nurses don't have to hunt for supplies; and a double-bin system, that ensures supply carts are never out.

Teams may "try-storm" ideas – implementing them on a trial basis, and documenting results. "Try-storming" gives teams a concrete sense as to whether the idea that looks good on paper or sounds great in discussion actually works.

In the end, the team builds a best-practice document, detailing the sequence of steps and the timing of new processes, considering safety, quality and work station layout at every step. Documentation continues to keep departments accountable for meeting their goals to minimize errors and waste.

LEAN is not a fad or a one-time project. Once implemented, LEAN thinking never goes away. "It's a continuous improvement process. It's a way of life, a way of doing business," Maass said.

LEAN success stories at Avera McKennan:

- Emergency Department length of stay was reduced to 2 hours, 6 minutes, and patient satisfaction scores have risen from the 60th percentile to the 90th.
- In Surgery, LEAN saved 600 hours of nurse time annually by eliminating end-of-shift inventory.
- In Ambulatory Surgery, RN assessment time for patients was cut by 44%, from 45 minutes to 25. Streamlining the work station and patient room layout cut the number of steps that busy RNs must take by 90%, from 260 to 27.
- In mammography, the time from when a patient registers until she enters the exam room was slashed from 40 minutes to 12.
- A clinic LEAN team reduced patient wait time, and improved privacy and confidentiality by shifting scheduling templates, and asking patients to self-room instead of waiting for a nurse call. This gives doctors potential to see four to seven additional patients each day.
- In the Neonatal Intensive Care Unit, a new process ensures that medications are administered within the proper time frame– without waking the baby and interrupting his or her sleep cycle. This is thanks to new identification tags that are visible outside of the swaddling blanket via a cloth tie. To ensure patient safety, a new more efficient process was developed in which two RNs verify the accuracy of all scheduled medications independently and at different times.
- In Materials Management a LEAN project decreased stock-outs from around 6% to less than 4%. Real-time receiving at a computer terminal at the dock instead of entering transactions later saved six minutes of staff time per transaction. The project also reduced overtime by nearly 25%.



Surgical project will accommodate increased volume

As Avera McKennan planned for its new Outpatient Surgery Center to open in June 2010, the "behind the scenes" infrastructure needed to be in place to support increased volume.

Central Processing is the hospital department which sterilizes, groups and re-packages instruments for surgery.

A LEAN project studied which instruments are used the most, and which instruments are used the least in surgery. Instruments for surgery were regrouped, eliminating those rarely used. Additional purchases focused on those instruments used the most, to reduce "flashing," a quick but less preferred means of sterilizing instruments when needed in an emergency, said Alice Ronk, Process Excellence consultant.

In the major surgery set, instruments were reduced from 122 to 82. The medium set was reduced from 90 to 57 instruments, and the orthopedics set was reduced from 60 to 43 instruments. Surgical sets now weigh less resulting in less heavy lifting required by staff. The reduction in instruments also saved several thousand dollars in purchasing instruments for additional sets and staff time required for reprocessing and set up.

In addition, LEAN standard work processes ensure that all instruments are sterilized in one way – the best way – every time for quality and safety assurance.