

Leveraging Lean Principles for Patient Safety

How going lean can reduce risk, improve care

By Susan Kanvik

Today's Environment

According to a recent study by the *Journal of Patient Safety*, patients may experience much higher adverse outcomes from hospital care than previously reported. The study reports that, each year, between 210,000 and 440,000 patients who go to the hospital for care suffer some type of preventable harm that contributes to their deaths.¹

In hospitals, one of the leading risks is an infection with a virus or bacteria, including staph and Methicillin-resistant *Staphylococcus aureus* (MRSA). According to the Centers for Disease Control and Prevention, there are 1.7 million healthcare-associated infections in the U.S. every year.²

America's risk of an Ebola epidemic is extremely small. The country has the public health resources and hospital capacity to stop the spread of the infection, which is only transmitted through direct contact with bodily fluids after a patient exhibits symptoms. However, patients really do have something to worry about: the very real chance that errors, oversights or deviations from established procedures could kill them.³

Point B's Perspective

Healthcare organizations have begun to give such risks the attention they deserve—and some are using lean principles to do so. Just 15 years ago, lean was practically nonexistent in healthcare. It was often

thought of as a manufacturing methodology. Today, we see healthcare organizations embracing lean principles to reduce the risk of infections and surgical errors, streamline processes and increase patient satisfaction.

What is Lean?

Lean is a process improvement methodology that combines tools, management systems and accountability to create value for customers—in this case, patients, physicians, nurses and other healthcare workers. In healthcare, the “lean approach” is more than quality improvement and cost reduction; it's about continuously striving for the best patient outcome and experience using the fewest wasted resources.

Healthcare organizations first used lean to improve productivity, reduce inventory, improve testing accuracy, and reduce purchasing and food service costs. Can lean really improve patient safety by reducing risk, errors and wait times? Those who have put it into action reply with an unequivocal “yes.”

Christopher Kim, a physician with the Department of Internal Medicine and Pediatrics at the University of Michigan, has applied lean at his hospital in Ann Arbor.⁴

“To really do lean projects well, you need the buy-in of the physicians—the hospitalists,” he says. “I believe hospitalists have a huge role in how successful lean projects can be. It behooves them to participate in these process improvement projects and take a lead role.”

¹ Allen, Marshall, *ProPublica*, “[How Many Die From Medical Mistakes In U.S. Hospitals?](#)” September 20, 2013.

² Griffin, Morgan, R, WebMD, “[Common Problems Patients Face in the Hospital.](#)”

³ Tozzi, John, *Bloomberg Business Week*, “[Scarier Than Ebola: Human Error.](#)” October 3, 2014.

⁴ Berczuk, Carol, *The Hospitalist*, “[The Lean Hospital.](#)” June 2008.

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Recognizing what's wrong with a process is the first step toward improving it. Lean gets managers out of their offices and into various departments to see problems in real time and firsthand, rather than relying on reports or hearsay. It allows physicians to "feel the pain" that patients, nurses and administrators feel daily.

"Lean is not necessarily about clinical care, but about reducing inefficiencies in processes needed for that care, by transforming waste into value," Dr. Kim says. "Up to 40 percent of time spent in hospitals is waste." In healthcare, that waste can be anything that causes a delay in patient care. Some consequences can be fatal.

Improving patient care and safety with Lean. The following lean methodologies are being adopted by healthcare organizations to improve safety and care:

5S Workplace Organization is a method of removing all unnecessary materials and sorting and standardizing only the necessary ones. When an operating room has only the minimal required equipment and materials, the risk of surgical error is reduced.

"Point-of-Use" or "Just-in-Time" delivery of surgical tools and medications to the physician at the right time and amount, eliminates waiting time during procedures. In critical operations such as heart surgery, this can make a life-or-death difference to the patient.

Standard Work helps ensure that critical medical procedures and protocols are followed and makes it easier to detect abnormalities if problems arise. Standard work procedures can be more effective if photos are included to display each task for easier understanding. An example of standard work could be "how to properly insert peripherally inserted central catheter lines into patients."

Visual Controls can be used to quickly identify defects or abnormalities. Such controls include floor markings that indicate restricted personnel zones, color-coded bins to identify new-versus-used syringes, and hospital room doors that indicate when a patient has an infectious disease, such as MRSA.

Quality checks are critical in preventing or minimizing that human error. These checks ensure that, prior to passing material or information downstream, a self-check is performed against the standard work for accuracy and completeness. For example, in a blood transfer, staff would check to make sure they collected the proper sample, that the labeling was accurate, complete and matched the donor, and that it was properly delivered to the collection location with proper control documentation.

"Mistake-proofing" is a technique to ensure that human error cannot occur. For example, medical instruments may have color-coded parts that fit together in only one way, thus preventing the wrong piece of equipment from being used.

Lean in action. Healthcare organizations across the country are putting lean principles into practice—and getting results. One hospital wanted to reduce the turnaround time for inserting PIC lines so patients could be discharged to home IV therapy more quickly. Lean methods reduced the average PIC wait time from 26 hours to 16 hours, with concomitant savings in time, money and safety.

Mark Pool, M.D., laboratory director of Riverside Medical Center in Kankakee, Illinois, has used lean to create a more efficient lab. "Just walking through, I saw a lot of redundant effort," he says. By getting a handle on inventory control, eliminating batching of tests, and standardizing procedures, he decreased test time considerably. This minimizes backups in the emergency department, a common location for spread of disease.

The Bottom Line

The ability to provide effective patient care will continue to be challenging for healthcare organizations. Point B can solve this challenge by providing well-trained process improvement experts who can guide, coach, and lead healthcare organizations to improve patient care through the application of lean principles. We really can't afford to wait.