LEAN CASE STUDY:

Mayo Clinic Trims The Fat From Lab Processes

The Lean team at Saint Mary's Hospital, a Mayo Clinic hospital, came up with a simple strategy to manage the paper order system for lab work in its ICUs. Trimming The Fat From Lab Processes

Henry David Thoreau cautioned that "our life is frittered away by detail," suggesting that we "simplify, simplify." And German artist and art teacher Hans Hoffman said simplifying means eliminating "the unnecessary so that the necessary may speak."

Both statements describe what Lean teams in labs and hospitals do: Identify the superfluous steps in a process that squander productivity and profit.

And while Lean is mostly a science, there's also an art to finding the simplest ways to drive out wasted time, motion, inventory, and space to give customers (ordering clinicians, patients, payers) what they want when they want it.

Case in point: The Lean team at Saint Marys Hospital, a Mayo Clinic hospital in Rochester, Minn., came up with a simple but clever strategy to manage what had become a chaotic paper order system for lab work in its ICUs. The team executed a "bus route" schedule in which specialized phlebotomists on a vascular access team drop by patients' rooms at designated times to collect blood for lab testing, including arterial blood gases. The technicians also perform point-of-care testing and place intravenous lines.

The vascular access team got its start a decade ago to consolidate specimen collection and IV placement in the units-a change that in and of itself boosted efficiency and patient care and satisfaction, says Twyla Rickard, laboratory operations manager for the Mayo Clinic. Then last year, the Lean team decided to revamp the way in which the technicians were accessing and managing paper orders. At the time, the vascular access team, or VAT, technicians were

receiving paper orders in multiple ways, creating opportunity for duplicate orders and other snafus. Some orders, Rickard says, "were hand delivered, some placed on [the VAT tech's] working cart or desk or maybe hung on the patient's door, or handed to the vascular access technician by the nurse or unit secretary."

Further fueling the confusion, Mayo physicians make rounds in teams, and sometimes one team would order what another had already requested. As a result, for every hour the VAT tech spent entering orders, the person spent two hours reworking them, Rickard says. And a VAT tech's pager was going off 30 or more times per shift for response to urgent requests. The Lean Team The Lean planning team took a hard look at how it might fix the process. At the Lean planning meetings were VAT team members (representing all shifts), nurses, sometimes respiratory therapists, and, in the most recent project winding up in the sixth ICU, the physician assistant/extender group, says VAT supervisor Teresa Coughlin. She says the collaborative effort included "a lot of 'what's in it for me' exploration to ensure the patient, nurses, physicians, etc. were all included."

As a first step, the team mapped the current way things were done from "beginning to end" to determine the "bottlenecks and areas of waste," Rickard says. Then they drew a "future state map that eliminated unnecessary process steps and waste... and focused on a single-piece flow process that would improve turnaround times, increase quality, and create value for the customer."

The team decided it could reduce paperwork and eliminate disorganization by keeping physician orders for the VAT on the outside of the patient's door. (To protect privacy, the orders are placed so that they face backward in a Plexiglas holder on the door.) The paper order in the holder provides a visual cue that a patient has an order for the VAT to manage. All of the physician teams use the same sheet to write orders. That way, Rickard says, they can see what another physician team has ordered so they don't duplicate orders and can simply add on to a previous order rather than create another.

Before the Lean project, ICU nurse Tracy Mietzner says, "the physicians would all write separate orders in the chart and the VATs would have to differentiate what was a duplicate."

Next the team initiated and posted a standardized "bus route" for the VAT tech to stop by each room in the ICU to check for and implement new physician orders. The ICU has 12 rooms in an easily visible U-shaped area so all the patients can be seen from the center where the tech's desk is located. The tech stops by the first three rooms from the top of the hour until a quarter after. So, for example, "if the physician writes the orders between 7:01 and 7:15 a.m,. the VAT [tech] will service that patient and the next two rooms from 7:01 to 7:15," Rickard says. Then the tech goes to the next three rooms from 7:16 to 7:30 and so on.

To determine that a technician could service three rooms in a 15-minute time slot, the team relied on already available "workload recordings" that managers collected by following staff with stopwatches to determine how long it took to complete various procedures, says VAT supervisor Coughlin.

Post Lean ICU's In the post Lean ICU's, laminated maps of the VAT bus route are posted outside the patients' doors so the doctors and nurses can see what time to expect the technician. Each time the phlebotomy tech comes by, he or she moves a large, colored paper clip to the next time someone from the VAT will arrive, which helps reduce stat orders. "If a physician is seeing a critical patient and wants a stat order," Rickard explains, "he or she can see that it's five minutes to 7 and the VAT will be there in five minutes-and can ask him/herself if the test can wait five minutes." In fact, this method has all but silenced the roughly 30 priority pages the VAT received each shift. Post-Lean, Rickard says, the VAT receives on average one to two pages each month.

Cardiac arrests and other emergencies interrupt the VAT's bus route. When that happens, the tech pages another tech known as a "flyer" who acts more like a "taxi" when he or she takes over the bus route so the VAT can manage the stat or emergency.

Nurse Mietzner has no doubt that the new system means better patient care. Not only are the patient interventions fewer, she says, "but before [the Lean project], if we had an hourly blood sugar and the technician was involved with a sick patient in another room, it might be two hours before the technician was available to do the blood sugar." But now a backup person takes over the bus route.

Dick Sitta, a vascular access technician, says Lean has reduced and evened out the VAT's workload. "Before we were bouncing back and forth from patients' rooms..." Another perk: "Reducing stress on health care staff can make a huge difference in terms of improving job satisfaction and retention, which is important given the workforce shortage," he says.