

Hospital Streamlines Medication Delivery

Highlights

- Simple low-tech solutions, such as storing frequently-used medications and supplies together, and keeping medication dispensers better allocated with most-used medications, eliminated the need for a high-tech tracking and stocking solution.
- Simple interface redesign kept information searching to a minimum.
- 40 minutes per nurse shift were shaved off through streamlining login procedures.

Although high-tech innovations, like automated medication dispensers and electronic medical records (EMR), are meant to make work easier, often the results of adopting these technologies disappoint. In a tech-heavy world, nurses spend time traveling from dispenser to dispenser to find the right combination of equipment and medicines. They spend a frustrating amount of time logging in to various systems over and over to get electronic information they need to care for their patients.

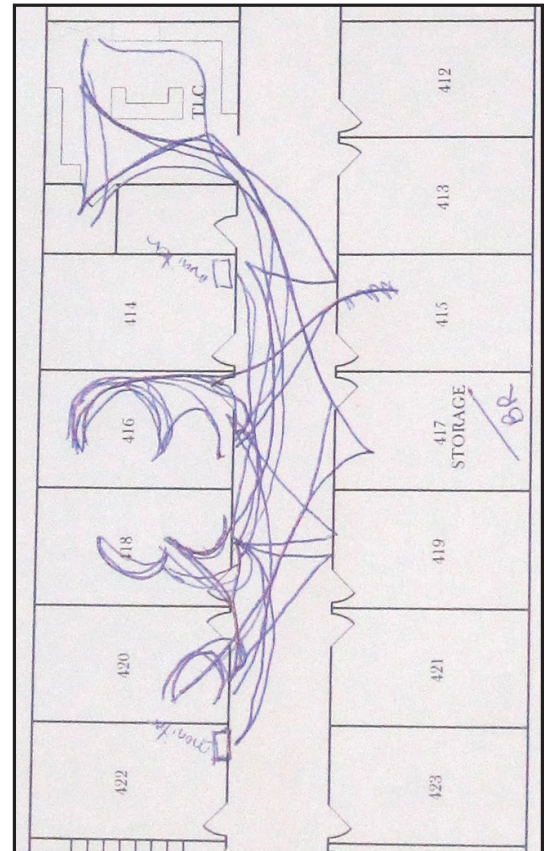
A Middle Tennessee hospital is studying how to make the closed-loop medication delivery system¹ as safe, simple and reliable as possible. The hospital engaged HPP to help improve medication delivery by applying technology in a way that would reduce the time nurses spend delivering medications, and increase the time they spend with patients. Specifically, the team looked at the process from the check of the Medication Administration Record (MAR) to the documentation that the patient has taken the medication.

Current Condition

Reducing needless complexity would make life easier for nurses; but fewer steps also reduce the potential to introduce errors, keeping patients safer. Beginning with an assessment of the current state and rolling into a four-day Future State Process Design² event, team members observed nurses making medication rounds on four different units, and used Spaghetti Diagramming and Value Stream Mapping to document the complexity and variation they saw.

¹ Closed loop medication delivery system refers to the feedback loop between computerized physician order entry, to the pharmacy, to delivery of the medication to the patient, and back to the electronic system to document that the medication was given.

² See definition, next page.

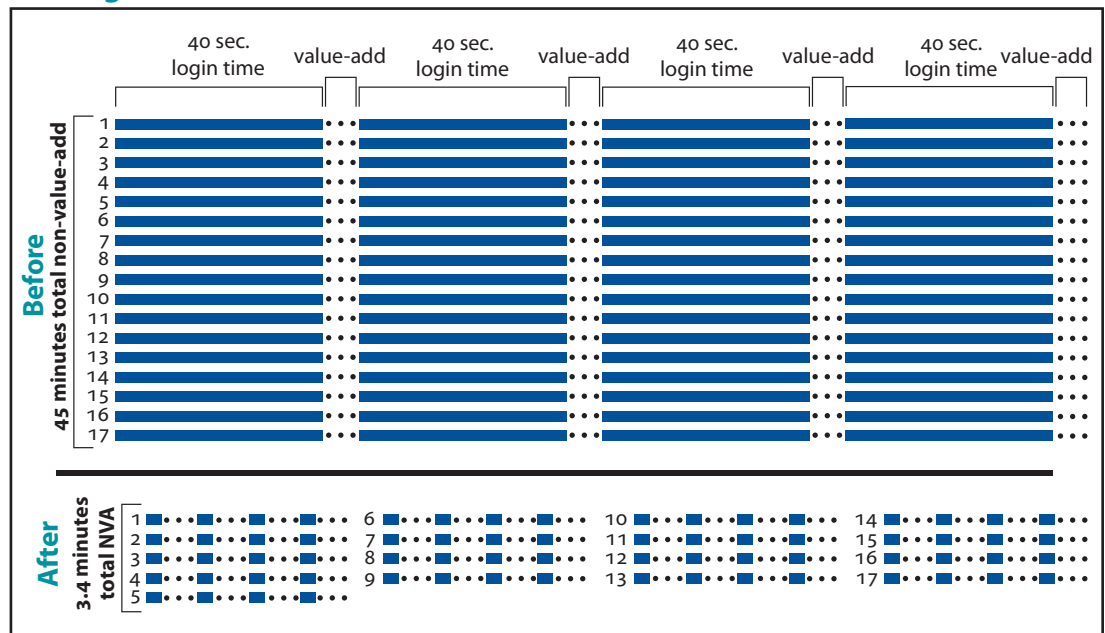


Spaghetti chart: the pencil line shows the tracks of one nurse over 81 minutes spent giving medications to three patients. Of that time, only 26 minutes were spent in direct patient care. “Value added” time was just 31%—the rest of the nurse’s time was spent traveling, searching, and logging into one electronic system or another.

Low-tech first; then high-tech

Before technology is applied, the processes must be re-designed. The team quickly discovered a number of low-tech improvements to try. They saw the wisdom in storing frequently used supplies together, close to the point of use, rather than having medications in one room and associated supplies in another. The team also looked at how to refill the automated medication dispensers to

Login Time Per Medication Pass Per Nurse Per Shift – Before and After



Definition

Revolution Instead of Evolution: Future State Process Design Event

A Future State Process Design Event is similar to a Kaizen Event, except that instead of incremental improvements to an existing process, the focus is on a major overhaul or redesign of the current state.

These are especially important when new equipment will be purchased for a remodel or new construction, helping to ensure that the best process is designed into the new facility.

For these reasons, unlike Kaizen, the changes are not typically able to be implemented within a one-week timeframe.

Low-tech solution to a high-tech problem. By using “Suspend” instead of logging off, nurses were able to log in to dispensers in three seconds instead of 40, saving more than 40 minutes per nurse per shift.

ensure that the most appropriate and frequently-used medications were always there, and devised ways to minimize distraction to nurses pulling medications. Other simple time-savers include making pill splitters available in the nurse servers rather than from the pharmacy.

Some issues did call for technology-based improvements. Nurses had to tediously switch screens to find routine information stored in a less-than-intuitive EMR. The team looked closely at how information was gathered and transmitted, with an eye toward automating as much as possible. The team identified the opportunity to place the information on a single EMR screen, versus multiple screens within the EMR plus two other system monitors.

Before administering medications, nurses need patient information like vital signs, lab values, orders, telemetry data and so forth. For example, nurse techs routinely hand-wrote patients’ vital signs for later transfer to the EMR, a process that batched work, consumed time and created potential for transcription error. Team members discovered that the newer machine that records vital signs can record that information directly to the EMR, creating instant information for

nurses, and relieving them of the recording function. Similarly, the team discovered that the latest generation IV “smart pumps” could be programmed to automatically download pump settings and feed pump information back to the EMR.

The team also examined ways in which the computer system could aid in error-proofing, by providing information on medications and lab values as needed, or “just in time.” Users would no longer search for current information, but have a system of prompts that would let them know these important values in real-time.

The dispensers do not communicate with the EMR. The team found that nurses must login four times per patient per medication pass (EMR and dispenser to pull meds, EMR to review meds at patient room and EMR after administering medications). From the nurse’s first touch to a working screen, each login averaged 40 seconds. In other words, waiting for logins consumed 45 minutes of each eight-hour shift. The team discovered that, by using the “suspend” feature, these logins could be reduced to approximately three seconds, saving more than 40 minutes per nurse per shift.