VA Pittsburgh Medical System

The secret of deploying new machines: *People First*

It may sound amusing now, but full deployment of the bar code medication administration (BCMA) system at the VA Pittsburgh Healthcare System required the services of a plumber. Now that 99 percent of patients on the 4 West post-surgical unit are receiving their medications on time, the team there believes they have some crucial information to share about BCMA implementation: even the most promising, sophisticated electronic systems must be run by real people.

The VA health system won acclaim when, five years ago, they made a massive investment in patient safety by converting to electronic medical records, computerized physician order entry, and BCMA nationwide. The state-of-the-art electronic system, properly and fully deployed, ensures a dramatic improvement in the "five rights" of medication delivery: right patient, right medication, right dose, right time, and right route (oral, IV, etc.). The system automatically tracks every step of the process without adding to the work load of the healthcare professional. Automatic collection of these data quickly makes problems visible, which is the first step toward fixing them.

This sophisticated electronic equipment, however, must be operated by frontline healthcare workers with varying degrees of interest and aptitude. Therein lies the opportunity for designing the way work is done.

Infection project leads to BCMA

Shortly after beginning a project to eliminate antibiotic-resistant infection in the post-surgical unit on 4 West, staff identified the BCMA system as the leading opportunity to eliminate wasted time. Using the Perfecting Patient Care technique of asking "Why" five times, the team learned that the system broke down every shift because the batteries would run down. Training had not addressed the machine's routine requirements. Troubleshooting began.

The first order of business was to place cue cards on the machine, to

> Chances are, hospital and Board leaders would be pleased to learn of a unit where 90% of medications were delivered on time. This was the starting point on the 4 West post-surgical unit at the VAPHS.
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> **But what did 90% really mean?** Of the 400 to 600 doses dispensed on the unit each day, 40 to 60 were late.
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> "It's hard get to the bottom of 40 or 50 individual problems," says Nurse Manager Sharon Parson.
>
> With 99% of medications on time, as they are on most days now, the 3 or 4 problems can be solved to root cause every day.

make sure that both the computer and scanner batteries were swapped through the charger on a regular schedule. Brief instructions were posted regarding the simple steps nurses should take to recover from a breakdown. If these instructions were still not successful, then the directions clearly stated how and who to call for help. Gone were the days of a nurse puzzling over a malfunctioning machine for 45 minutes.

Enter the plumber

When that was fixed, one mystery still remained: batteries did not always charge in the charger. Again, the team observed the comings and goings around the machine and discovered the problem. The BCMA battery charger was located next to a sink. When workers washed their hands at the sink, the high water pressure caused water to splash on the electrical outlet, which triggering the ground fault interrupter, a safety device that shuts off the outlet in the presence of moisture. A dead outlet meant dead batteries.

Enter the plumber. The water pressure was reduced to keep the water from splashing, an adjustment ultimately made in all patient rooms as well.

Targeting the training

Once these initial problems were observed and addressed, the team looked at the training gap. Nurses began keeping a log of the problems they encountered, and the

team leader tracked calls to the help desk. The training was targeted specifically to the needs expressed.

"Getting used to a whole new way of dispensing medications was a big culture change," says Sharon Parson, R.N., the Nurse Manager on 4 West. "Not every user had the same ability to use this system."

The team identified the stronger users, those with higher than average interest and capability for using the system. They encouraged any user with a BCMA question or problem to find help through a charge nurse. They also mounted cards on the machine, to let users know whom to call for help (see illustration).

90% is good: 99% is better

Initially, the unit achieved an impressive 90 percent rate of medication timeliness on 4 West. That is, 90 percent of the time, the right patient received the right medication in the right dose within the agreed-upon window of time. "Missing meds," the bane of existence for nurse and pharmacist, were already fairly rare.

But what did 90 percent mean, exactly? Staff deliver between 400 to 600 medications per day to the unit's 30 patients. With 10 percent of the medications delivered outside the time window, it meant that the nurse leaders would need to follow up on between 40 and 60 doses.

"It's hard get to the bottom of 40 or 50 individual problems," said Parson. The group began weekly meetings with the pharmacy troubleshooting things that had gone wrong, patient by patient, one by one. They discovered that, in fixing the root cause of one individual error, they usually solved whole strings of problems that had been plaguing the system.

Improvements have continued over time (see chart), with the rate of medication timeliness on 4 West rising to 99 percent for the last three months.

"Today we might only have 2 or 3 medications per day falling outside the window," says Parson. "Now
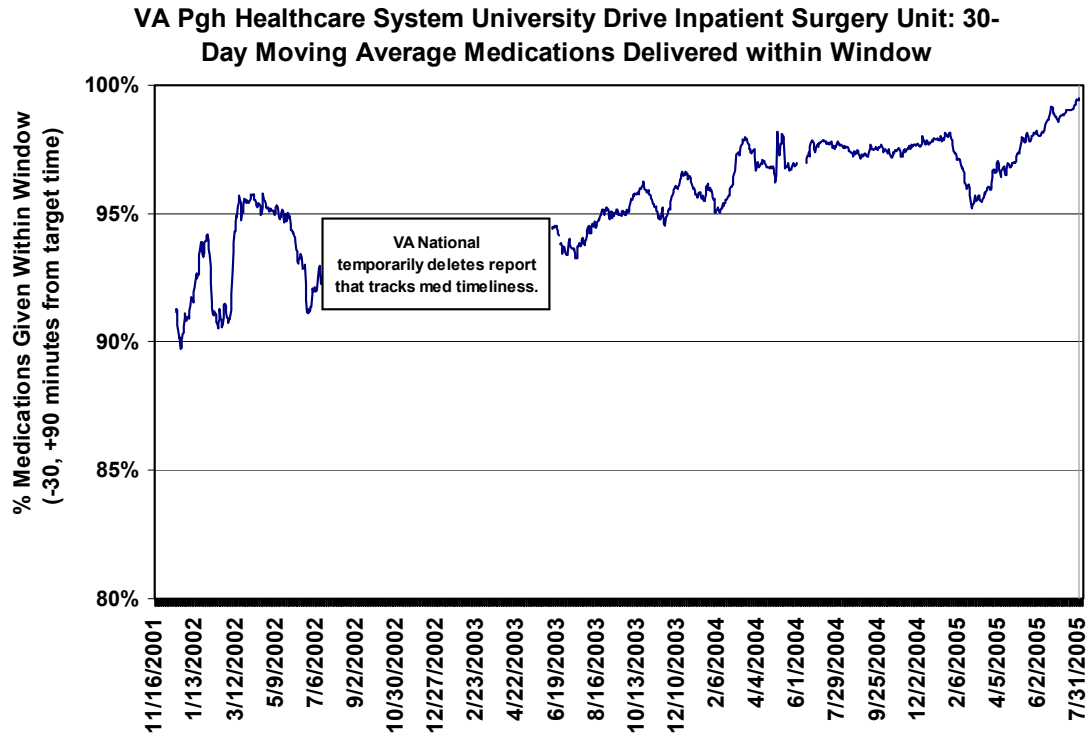

BCMA Staff HELP Card

Always keep the laptop plugged in when not in use so the battery charges for the next pass.

If there is no BCMA icon on the screen, check the following:

1. Minimized/dropped BCMA Program at the bottom of screen (click on to activate)
2. BCMA icon in the Recycle Bin at lower left Icon column (click on to re-activate)
3. BCMA icon hidden under another icon (go to start click and look for title to re-activate)

If you need help or have questions about the laptop and hardware contact Mike Delsota, IRM page 4007 or the AOD (6162-UD) or (4605-HD) for the IRM on call specialist (off tours)

VA Pgh Healthcare System University Drive Inpatient Surgery Unit: 30-Day Moving Average Medications Delivered within Window

% Medications Given Within Window (-30, +90 minutes from target time)

VA National temporarily deletes report that tracks med timeliness.

we can really drill down to root cause. Usually we find the problem is due to something like the patient's being off the floor for a procedure. Missing medications are extremely rare, thanks to our communication with the pharmacy."

And the staff knows how they are doing. Parson sends the latest updated on-time medication administration chart with a change-of-shift report, along with other measures of improvement, and posts them on a wall. But nurses do not need to wait: they can get a print-out at the end of each medication pass that shows whether all of their medications were delivered on time. If they have a problem, they can call for help and continue to care for patients.

Sophisticated electronic machinery can

indeed make patients much safer. However, using the machinery to its fullest requires the creativity, commitment and discipline of the people who do the work.

On the trail of missing meds

Ellesha McCray, RN, Team Leader on 4 West from 2001-04. Ellesha worked with Sharon Parson, RN, who is now the Nurse Manager on 4 West, assuming many Team Leader duties. They were aided on-site with a PRHI Coach, Peter Perreiah, who is now also PRHI's Managing Director.