Advance medication safety and workflow efficiency through automation

Pyxis® technologies

"There is a great sense of trust and security among our nursing and pharmacy staff now. We would never go back to our old system."

Ryan Stice, DOP
Porter Adventist Hospital
Denver, CO

Pyxis®

CareFusion

Porter Adventist Hospital, a 368-bed community non-profit acute care facility in Denver, Colorado, is part of Centura Health, a healthcare system comprised of 12 hospitals throughout Colorado. Porter Adventist was named a Solucient 100 Top Hospitals, won the Mercury Award for Excellence in Cardiac Services and ranked in the top 5% of hospitals nationally for clinical excellence.

Porter Adventist implemented the Pyxis MedStation® system and the Pyxis CⁱⁱSafe® system from CareFusion, and began to quickly enjoy the benefits of automation technologies. The hospital continually evaluates opportunities to implement automation and update their practices to optimize their use of existing automation. With roughly 120,000 medication doses dispensed monthly, Porter staff implemented an "all meds in the Pyxis MedStation system" policy to expedite their refill process.

> *"Our ability to identify STAT orders using Pyxis Connect has really improved our order turnaround time for urgent orders."*

Sharon Cross, RN
Porter Adventist Hospital
Denver, CO

Enhancing medication order management

Recognizing the potential benefits of automating the order management process throughout their facility, a multidisciplinary team of directors of pharmacy, IT directors, pharmacists and nurses decided to implement the Pyxis Connect physician order management system to replace their existing non-automated system. As Ryan Stice, Director of Pharmacy at Porter Adventist, explains, "Implementing Pyxis Connect seemed like a no-brainer. One of our pharmacists even commented that it was a risk not to have this system in place."

Sharon Cross, ICU RN at Porter Adventist, elaborates, "We were using triplicate copy NCR forms before we started using Pyxis Connect. The forms had to be filled out by hand and the carbon copies were hard to read, so we spent a lot of time on the phone doing follow-ups. We also could not identify STAT orders under the old system." Staff was hampered by the need to store carbon copy forms, further compounding the need for an automated order management system.

The results following the Pyxis Connect implementation were impressive. A pre-and-post-installation study revealed that order turnaround time decreased by 62% to 11 minutes and that the percent of all orders verified in less than one hour increased to 90.7%.*

Additional investment justifications included overall nursing satisfaction, with pharmacy services increasing dramatically. "Our ability to identify STAT orders and easily communicate them to the pharmacy using Pyxis Connect has improved our turnaround time for urgent orders," explains Cross.

Pyxis Connect has helped improve workflow efficiency in the pharmacy, particularly around order history. "Pyxis Connect makes it easy to track down when orders were filed and filled. The system stores all of the orders online, making it very easy to retrieve the order history. You just right-click and can view every action taken with a date and time stamp," adds Stice.

The efficiencies gained by using Pyxis Connect have further benefited the Porter Adventist staff and patients by enabling more time for pharmacists to make clinical consultations and support patient care. The Pyxis Connect order stations located in specific care areas augments clinical participation by allowing pharmacists to do order entry on the nursing unit. As Stice summarizes, "Pyxis Connect has helped streamline central pharmacy functions and enabled clinical staff to go on rounds in the patient care areas."
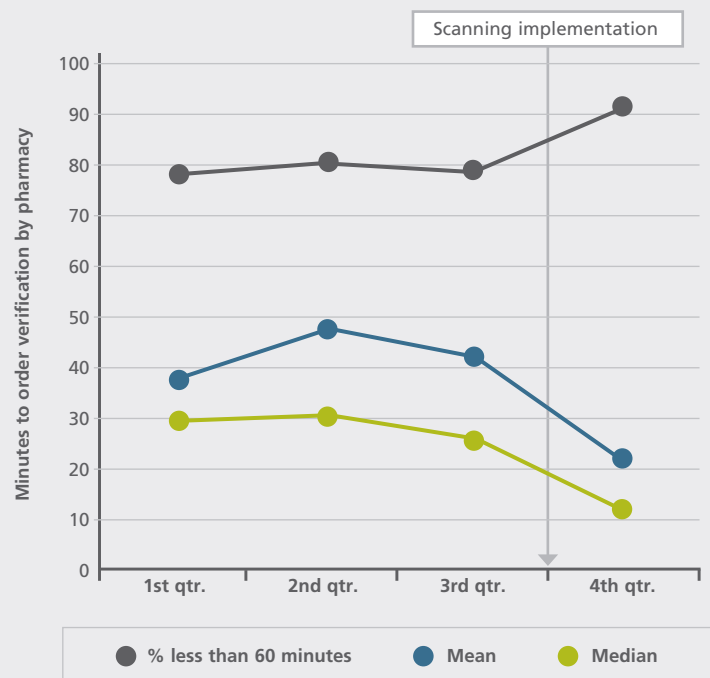
Pyxis Connect pre-and-post implementation study[*]

Impact on medication order processing

One month after implementation, a dataset of 13,548 medication orders at Porter Adventist was analyzed for processing times, resulting in:

- Decreased mean time to verification by 52% to 20 minutes
- Decreased median time to verification by 62% to 11 minutes
- Increased percent of all orders verified in less than 60 minutes to 90.7%
- High overall nursing satisfaction with pharmacy services, exceeding 4 on a 5-point scale for the first time

Medication order processing times

Scanning implementation

(chart: Minutes to order verification by pharmacy, y-axis 0–100, x-axis 1st qtr., 2nd qtr., 3rd qtr., 4th qtr.)

Legend:
- ● % less than 60 minutes
- ● Mean
- ● Median

Safeguarding the pick-check-fill process

Shortly after adding Pyxis Connect, Porter Adventist added the Pyxis PAR$_X$® system for pharmacy auto replenishment to help further advance workflow efficiency and medication safety. A pre-and-post Pyxis PAR$_X$ system implementation study revealed a remarkable 48% reduction in refill errors[*]. Adds Ryan Stice, "With preventable refill errors, we could have been putting our patients at unnecessary risk. After moving to an all meds in the Pyxis MedStation system model, we even more clearly saw the need for an automated system. Now, our pharmacists do not want to work without the Pyxis PAR$_X$ system because they feel it helps protect them from making mistakes."

With the help of Pyxis automation technologies, Porter Adventist now has a thorough and reliable approach to refilling and dispensing medications throughout their care areas. Medication orders are entered using Pyxis Connect, with STAT orders prioritized and appropriate orders routed to specific care areas. After orders are verified by a pharmacist, they are automatically available in the Pyxis MedStation system, further improving order turnaround time. When a medication in a particular Pyxis MedStation system needs to be replenished, the refills are picked, checked and filled using the Pyxis PAR$_X$ system, helping ensure the right medication gets refilled. "A great sense of trust and security among our nursing and pharmacy staff exists now. We would never go back to our old system," concludes Stice.

"Medication refill errors reduced by 48% after Pyxis PAR$_X$ system implementation."[*]

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