

IntelliFill *i.v.*

Human Intelligence, Robotic Performance



Miami Children's Hospital is a world leader in pediatric healthcare. With a medical staff of more than 650 physicians and over 2000 employees, the 275-bed medical facility is renowned for excellence in all aspects of pediatric medical care from birth through adolescence.

Miami Children's Commitment to Patient Safety

The Institute of Medicine's 1999 report "To Err Is Human" captured the attention of healthcare professionals across the country, many of whom had previously lacked the incentive to launch the types of initiatives required to improve patient safety. Miami Children's Hospital, one of the nation's leading pediatric facilities, used the report as impetus to embark on a comprehensive strategic plan that includes technology deployment to advance patient safety.

"Our strategy was to focus on three of the steps in the medication process where errors can potentially occur: prescribing, preparation, and administration," said Connie Chan, Pharm.D, director, pharmacy services. "We carefully evaluated every aspect of these areas and have taken the necessary steps to deploy an integrated technology strategy to help us achieve our goals."

Bar Coding with IntelliFill *i.v.*

After performing a thorough evaluation of how the inpatient pharmacy could minimize the potential for errors in the medication-use process, Chan's team selected ForHealth Technologies' IntelliFill *i.v.*, the first robotic technology designed for the automated preparation of compounded sterile products.

"Critical medications and sterility concerns related to the manual preparation of IVs made automating the compounding of intravenous medications a higher priority than oral dose technology," said Chan. "Unlike most capital requests where benefits from cost savings were the primary focus, I presented IntelliFill *i.v.* to the Capital Budget Committee with the primary emphasis on patient safety."

"What makes IntelliFill *i.v.* so compelling is that its syringes are bar coded and they're patient-specific," said Chan. Because the ForHealth system delivers bar coded doses ready for patient use, when used with point of care scanning and computerized patient information systems, IntelliFill can help prevent many medication errors. Comments Chan, "Bar coding is absolutely key to administration accuracy and it, of course, ties in nicely with our bedside point of care (BPOC) system. IntelliFill allows us to automate IV preparations, minimizing the potential for human error in the process."

Case Study



Implementing Bar Code Point-of-Care

To address the administration step in the medication process, Miami Children's implemented bedside point-of-care (BPOC) in 2002.

With their BPOC system, nurses scan the patient ID bracelet, their own ID badge, and the IntelliFill syringe labels, as well as other bar coded medications, thus verifying the "five rights" of medication administration—right patient, drug, dose, time and route.

"Upon administering the medication, a confirmation results in a real-time eMAR (electronic medication administration record), which is automatically added to the patient's chart," said Chan. "With eMARs, the instant the pharmacist enters an order, nursing can review the order immediately on the floor and can verify whether it's correct or incorrect for a patient." Once a nurse verifies that an order is correct, it becomes a permanent record and the system informs the nurse the exact time to administer the medication. Finally, the system captures the exact time the medication is given, enabling nursing to monitor whether patients are receiving their medications on time.

"We were the first pediatric hospital in the country to implement bedside bar coding," said Chan. "After almost five years, the use of bar code technology has proven to be an effective tool in reducing and preventing medication errors at the point of administration. Given our proven success at this juncture, we will continue to monitor and improve our processes."

Moving Toward e-Prescribing

For the prescribing piece of the medication-use continuum, Miami Children's is currently evaluating pharmacy management systems with the goal of moving forward with computerized physician order entry (CPOE).

"We cannot fully implement CPOE until we upgrade our pharmacy management system," said Chan. "We're currently in the process of looking at systems as well as evaluating other technologies to upgrade our clinical documentation and our ED process. Once these decisions are complete, we'll be well on our way to making decisions on CPOE over the next two years."

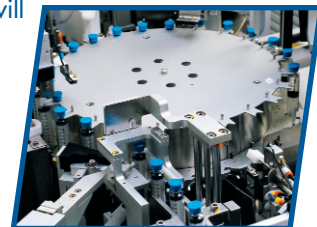
Chan said that addressing the prescribing component of the medication process is the most difficult. "It's a real challenge to put all the pieces together because of the sheer number and wide range of physicians along with the complete spectrum of computer literacy." Chan adds, "Due to this, we've put CPOE at the end of our priority list not because it's any less of a priority, it's just more complex and requires more time."

Realizing the Ultimate Goal

Miami Children's Hospital has made IntelliFill i.v. an important part of their overall strategy to reduce medication errors by using technology, improving processes and building a culture of safety. To build on their success to date, the hospital will continue to implement technology as solutions to address other steps in the medication-use process.

"Our long-term goal is to expand our services with IntelliFill i.v. to other areas of the hospital including the OR and ED," said Chan. "As we make further progress, we'll also measure the system's ability to improve our productivity and efficiency, and to help us minimize medication waste. I think IntelliFill will fill that gap very nicely."

As Miami Children's looks ahead to realizing the ultimate achievement of their patient safety goals, Chan sums up their ultimate mission, "At the end of the day, we want to ensure that our house is completely in order and that the hospital has addressed all the vulnerability points in the medication use process."



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