Breast Milk Management System Prevents Errors In The Neonatal Intensive Care Unit

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By ensuring that the right baby gets the right breast milk, Sunnybrook has become a world leader in neonatal patient safety and the prevention of medical errors, garnering the hospital a prestigious award from Microsoft.

The implementation of a sophisticated milk management system in Sunnybrook's neonatal intensive care unit (NICU) is a world first, involving the management of virtually every aspect of milk administration. The potential risk of viral and bacterial transmission through breast milk requires a strict standard for breast milk handling. Errors can occur at any point in the handling process which includes collection, storage, preparation and administration.

The LacTrack SafeLx system, developed jointly by Neoteric Technology Ltd and staff in the hospital's NICU, tracks milk collection, storage, preparation and eventually the feeding of premature infants using wireless mobile computers and printers. This new methodology was first used for blood transfusions at Sunnybrook, and has been adapted to meet the needs of the NICU.

Sunnybrook's leadership has been recognized by the 2008 Microsoft HUG Healthcare Innovation Awards; the NICU has placed first in the category of "Delivery Transformation". The awards are presented annually to healthcare organizations who, working with a solutions partner, use technology to enhance and transform the quality of patient care.

"Human milk is the gold standard in infant feeding," says Dorothy Dougherty, a registered nurse and certified lactation consultant in the NICU. "Breast milk is also considered a body substance product, so it is key that we ensure expressed milk gets to the right baby. Staff find the handheld wireless scanners easy to use and also appreciate that making an error is now almost impossible."
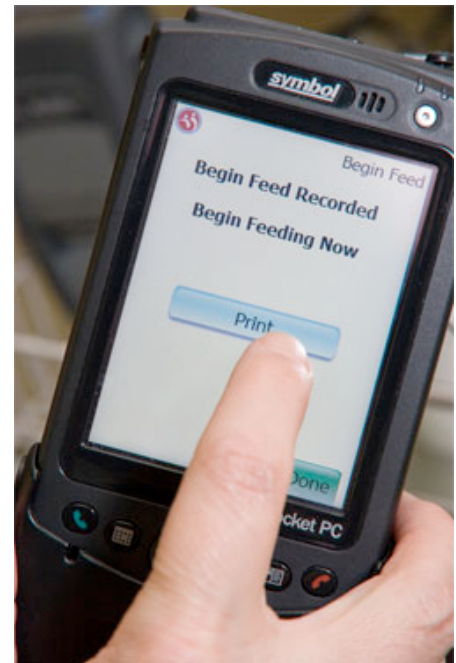
The process begins when a baby is admitted to the NICU. A barcode label is generated not only for each baby but also for anyone who has a role in ordering a feeding, milk preparation or feeding the infant. Each mother who will be expressing breast milk is given labels with her baby's barcode, which she then affixes to the milk she has pumped. When the physician or dietitian orders a specific feed for a baby, the NICU feed preparation technicians scan the order and prepare customized labels for feeds. The last scanning occurs in the neonatal unit at the time that an infant is fed.

"If there is an error at any point, a critical alarm sounds. It is loud enough for both the nurse and those around her to hear, so the chances of an unnoticed error happening are slim," explains Dorothy Dougherty. "The number of feeds on an annual basis is quite astounding. Each baby has about 10 feeds a day and, with 30 babies in the unit, this equals approximately 110,000 feeds per year in the NICU."

The new system represents a departure from older methods like the "double-check" or "two-nurse check" of each feed prior to feeding the infant. This repetitive visual double-check was found not to be a reliable method in preventing breast milk errors.

The Hand-held device up close

"This initiative reflects Sunnybrook's commitment to patient safety. We are ethically and morally obliged to ensure that we are constantly striving to become the safest hospital in Canada, especially in the NICU where we have such a vulnerable patient population," says Dr. Michael Dunn, Chief of the Department of Newborn and Developmental Paediatrics at Sunnybrook. "We believe that this methodology can and should go beyond breast milk and transfusions to include lab samples and medication administration."

Over 160 staff in Sunnybrook's NICU have been trained and are now using the milk management system. This includes all nurses, neonatologists, dietitians and feed preparation technicians. There has been 100 per cent compliance among staff.

Data collection is an important feature of the new system. "Every aspect of the milk collection, storage and administration process is verified electronically and recorded in a central management system for auditing purposes," adds Dorothy Dougherty. Now we can track specific items, such as how many times a nurse has