A Retrospective Two Year Study of Breast Milk Error Prevention In The Neonatal Intensive Care Unit

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Abstract

Problem Statement:
The first question – after two years of continuously using the Mother’s Own Milk System (MOMS) breastmilk barcoding system by Timeless Medical Systems, have the clinicians become dependent on the system to prevent errors? The second question – does having a dedicated milk technician further reduce errors?

Methods:
Reports from the breastmilk barcoding system’s database show how many of four types of critical errors were reported. These error types are: attempting to combine dissimilarly fortified bottles, using expired milk, placing a bottle into a different patient’s storage bin and feeding a patient another patient’s breastmilk bottle. The total number of bottles fed per unit was used to give an error rate.

Summary of Results:
Errors have been tracked for two consecutive years with a significant reduction in the error rate on all three units from year one to two. The addition of a milk technician further reduce errors.

Implications and Lessons Learned:
The majority of units that maintain the use of barcoding to manage breastmilk usage in the NICU have continued to improve patient safety by reducing the number of breastmilk errors. In units that combine a milk technician with barcoding, the error rate is even lower than just barcoding alone.

Introduction

Nationwide Children’s Hospital is a tertiary care children’s hospital. The Neonatal Intensive Care Unit is a 99 bed level IV facility that provides care for the most critically ill newborns. The NICU is a major referral center for the state of Ohio and the surrounding region.

Purpose

A retrospective analysis to determine the continued effectiveness of implementing a breast milk bar-coding system in the Neonatal Intensive Care Unit (NICU) at Nationwide Children’s Hospital (NCH) after two years of continuous use.

Findings

Errors have been tracked for two consecutive years with a significant reduction in the error rate on two of the three units from year one to two. Statistical analysis shows that the changes in error rates are not related to changes in the number of bottles fed to patients. The breastmilk error rate was further reduced in all categories except fortification errors on the J4 unit with the addition of a milk tech.

Summary

From Year 1 to Year 2, the number of scans of expired bottles in the barcoding system was reduced by 40% (from 1992 to 1185 bottles) over the three units combined. During this same period, the number of bottles of wrong milk that were attempted to be fed to the wrong baby was reduced by 22% (from 541 to 426 bottles). One unit had an increase in the number of attempts to feed wrong milk to wrong baby. During this time, there were two sets of higher order multiples on this unit. Knowing that in the bar coding system, once milk has been fortified for a particular infant, it cannot be fed to siblings, which staff attempted to do, therefore staff required re-training on how to prepare milk for multiples while conserving the supply.

On the unit with the milk tech, the total number scans of expired bottles during her working hours were reduced by 35% (from 303 to 128 bottles) from the 1st to 2nd year. During this same period, the number of expired bottles that were scanned during her non-working hours was reduced by 40% (from 1090 to 650 bottles).

Conclusion

The use of barcoding to manage breastmilk usage in the NICU has continued to improve patient safety by reducing the number of breastmilk errors. In units that combine a milk technician with barcoding, the error rate is even lower than just barcoding alone. This reduction in error rates with a milk tech shows that having a dedicated staff person(s) committed to breastmilk preparation adds to the safety environment and gives an added level of protection to a vulnerable population.