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Provision of breast milk after implementation of a breast milk tracking system



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BACKGROUND

- Breast milk (BM) is critical to optimize health outcomes in all infants
- Infants admitted to the Neonatal Intensive Care Unit (NICU) commonly experience barriers to adequate BM feeding:

1) BM provision issues

- parent-infant separation
- pump dependence / less lactation support
- maternal and/or infant illness
- inadequate BM volumes

2) BM safety errors

- handling/mixing mishaps
- feeding misadministration



- Breast milk tracking systems with an app-based parent communication interface (BMTS) may help decrease BM errors, increase parental communication and improve BM feeding in the NICU

OBJECTIVE/HYPOTHESIS

- To evaluate whether implementation of a BMTS improves provision of BM for infants at NICU discharge from Baystate Children's Hospital (BCH) in Springfield, MA

DESIGN

- A retrospective cohort study was conducted on all surviving infants discharged home from the BCH NICU over a 2-year period:
 - PRE: pre-BMTS implementation (Jan 2021 – March 2022)
 - POST: post-BMTS implementation (April 2022 - Dec 2022)
- Infant characteristics tracked: feed-type at ultimate discharge, gestational age (GA), birthweight (BW) & length of stay (LOS)
- Parental-NICU communications were tracked via the BMTS app & BM error rates were tracked via our safety reporting system (SRS)
- Descriptive statistics were computed and comparisons made by Chi-squared test and student t test (significance $p < 0.05$)

RESULTS

- Total of 2,344 infants qualified for this study (PRE cohort: $n = 1,831$; and POST cohort: $n = 513$) with an average GA of 35 weeks and BW of 2.6 kg
- There were no differences in baseline characteristics between cohorts
- In the POST cohort, there was an improvement in discharge BM provision from 58.8% to 75% and a decrease in exclusive formula use from 41.2% to 25% ($p < 0.001$) as compared to the PRE cohort
- BM provision at NICU discharge when comparing a subset of only preterm infants < 35 weeks' GA also improved: 62.3% in the PRE vs 75.6% in the POST with a concordant drop in formula use ($p = 0.002$)
- POST cohort had less BM errors (PRE: 9 SRS; vs POST: 1 SRS), increased parental-NICU communications using the BMTS app interface, and improved patient satisfaction attributed to the app

Table 1: Baseline characteristics and outcomes of surviving NICU *preterm infants* discharged home before vs after implementation of a breast milk tracking system

	PRE (prior to breast milk tracking system) N = 419	POST (after breast milk tracking system) N = 172	p value
Gestation (weeks)	32.5 ± 2.7	32.8 ± 2.1	0.17
Birthweight (grams)	1841 ± 579	1897 ± 539	0.28
Length of Stay (days)	30.6 ± 39	25.4 ± 24	0.10
Male Sex	53.2%	50.6%	0.34
Black and/or Hispanic	47.5%	46.8%	0.90
Public Insurance	55.9%	62.3%	0.16
Any Breast Milk @ NICU Discharge	62.3%	75.6%	0.002
Exclusive Formula @ NICU Discharge	37.7%	24.4%	0.002

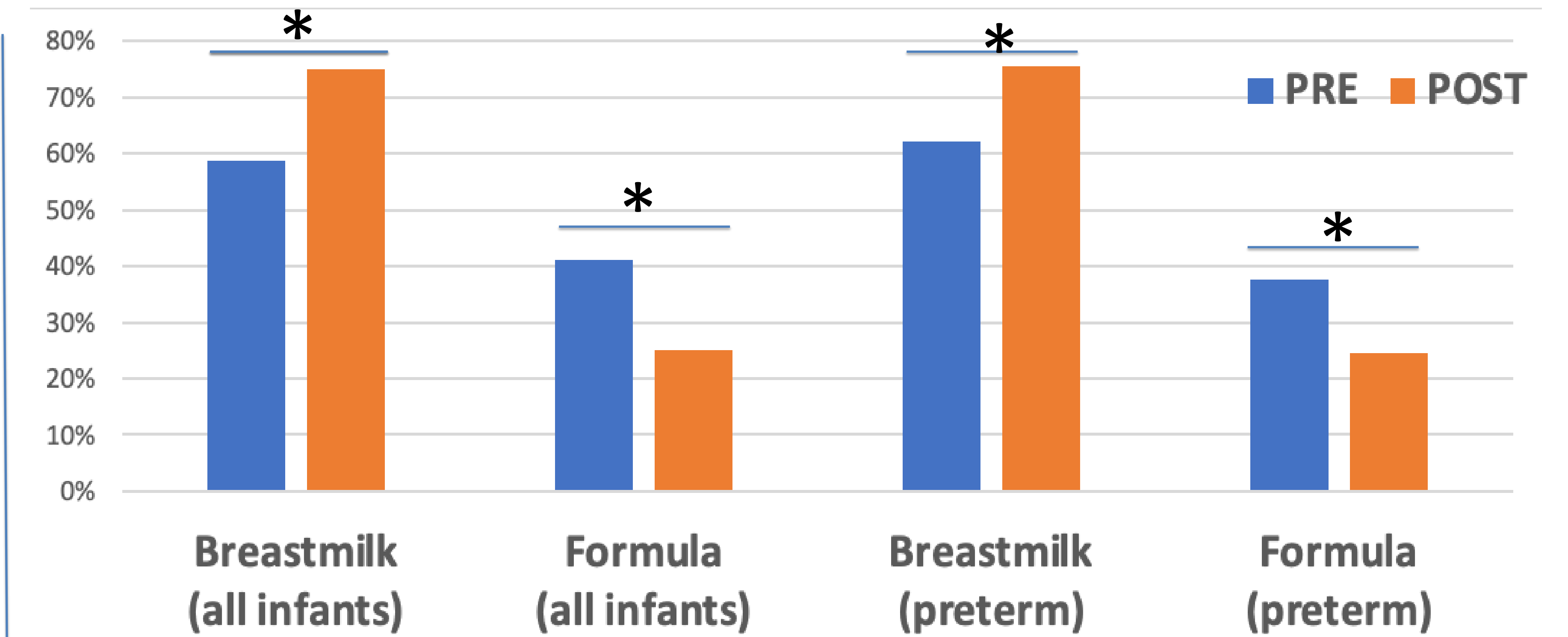


Figure 1: Percent of infants receiving any breastmilk or exclusive formula feeding at NICU discharge before (PRE) vs after (POST) implementation of breast milk tracking system (* indicates $p < 0.01$)

CONCLUSIONS

- Implementation of a BMTS is associated with increased BM provision and less exclusive formula use at discharge from the Baystate NICU
- Increased parental communications using the BMTS-parent interface & decreased BM errors may have contributed to the overall improvement in BM provision

LIMITATIONS/PERSPECTIVES

- Retrospective, single center study so applicability is limited
- Shorter time frame/lower numbers in the POST cohort may impact outcomes
- Implementation of a BMTS was initially labor intensive and required considerable effort and staff training, as well as cost considerations

FUTURE DIRECTIONS

- Use the BMTS analytics to assess BM characteristics (pumping volumes, etc)
- Use QI methodology to continue to improve BM provision
- Continue to use the BMTS to send BM education, updates & pictures to parents

CITATIONS

- Reena Oza-Frank, Rashmi Kachoria, James Dail, Jasmine Green, Krista Walls, Richard E. McClead; A Quality Improvement Project to Decrease Human Milk Errors in the NICU. *Pediatrics* February 2017