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Human Milk at Discharge

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Human Milk at Discharge: A Quality Improvement Project

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Infants in the neonatal intensive care setting are at risk for inadequate nutrition due to their premature state. Mothers providing human milk to their infant immediately after birth and during their hospital stay aids in adequate growth and development (American Academy of Pediatrics, 2022). Therefore, mothers should be provided lactation support. As the organization is committed to improving patient outcomes, ensuring lactation support for mothers aligns with the organization's strategic plan to promote health equity and improve health populations.

Infants in the neonatal intensive care unit (NICU) face the risk of inadequate nutrition due to their premature state. The provision of human milk by mothers immediately after birth and throughout the hospital stay is crucial for the infants' growth and development, underscoring the need for lactation support. This project delineates the implementation and description of interventions aimed at increasing the amount of human milk received by infants within 24 hours of discharge from a 16-bed NICU with nursing ratios ranging from 2-5:1. Previously, two bedside nurses, who were Certified Lactation Counselors (CLCs), offered lactation support when available. Additionally, Lactation Superusers (LSUs) not certified by an accredited body also extended support. However, when a consult was requested, a team of hospital non-NICU-based counselors attended to the lactating parent and infant instead of those who were unit-based. In response, this project introduced and assessed the impact of employing NICU-specific CLCs and LSUs with exclusive access to breast pumps to augment the volume of human milk infants received by discharge. The intervention addressed the procedural execution of these targeted interventions, their influence on increasing human milk at discharge rates, and the enhanced outcomes in lactation support.

Problem Statement and Gap Analysis

In the NICU, there was a lack of support for lactating mothers. As infants were transferred or admitted, their mothers experienced a 24- to 48-hour delay to be seen by a hospital-based CLC or lactation support person. Bedside nurses aim to provide optimal care, however, they lack the basic skill competency of educating parents on the benefits of human milk, assisting with breast pump assembly, and instruction on breastfeeding initiation. Nursing support is associated with initiation and successful breastfeeding outcomes (Yang et al., 2018). Thus, nurses must be adequately trained to support effectively. In turn, the lack of a standard competency results in education not being provided to parents. Giving nurses adequate tools and resources is key to a mother's success with breastfeeding.

A gap analysis determined a lack of timely lactation support in the NICU. The current average yearly rate since 2016 in this NICU for human milk at discharge is 44.4% compared to national (51%) and international (77.5%) benchmarking rates (Vermont Oxford Network, 2023). Using a fishbone diagram to collect data, NICU leadership determined barriers to lactation support and human milk utilization rates, identifying several areas of consideration. Breastfeeding can present challenges for new mothers, particularly when physical barriers like cleft lip/palate or inverted nipples are present; these obstacles can impede proper latching and hinder the delivery of vital nutrients to the infant (Centers for Disease Control, 2021). Lactation support is crucial for mothers to ensure the optimal nourishment of their children. With professional guidance and support, parents can overcome these challenges and reach their lactation goals. Mothers having challenges with their infant's latching causes them to discontinue their efforts because of a lack of milk production and feelings of inadequacy (Nabulsi et al., 2022). Challenges or barriers to breastfeeding can deter mothers from providing milk, supporting

mothers with a CLC or lactation support will help them succeed even when challenges arise. Ensuring that this NICU had daily lactation support helped mitigate these breastfeeding challenges and educated families about the benefits of human milk.

Current practice includes sharing nine breast pumps among up to sixteen sets of parents in this NICU. Due to limited breast pump availability and a lack of nursing competency in lactation support, the department experienced a lower than the national average of human milk at discharge and breastfeeding rates. There is a correlation between exclusive pumping and increased breastfed infants (Rosenbaum, 2022). Parents with 24-hour access to a breast pump are more likely to provide human milk to their infants. Another barrier was the lack of support within the NICU. The role of the CLC is to meet with parents within 24 hours. This organization, prior to the start of the project, had 10 lactation support persons to support over 500 neonatal and pediatric beds, as not all neonates go to the NICU. As a result, there was a delay in initiating breastfeeding/pumping. The two CLCs in the department were not meeting with parents in the neonatal unit as they accepted patient assignments daily. The gap in the meetings with parents in the neonatal unit was the focus of change with this project.

Background and Significance

Ensuring all parents know human milk's nutritional benefits is critical to helping them decide to provide human milk. Caregivers must be educated on breastfeeding and support mothers to succeed in their breastfeeding goals. CLCs are the most qualified professionals to support initiating and sustaining human milk supply (Yang et al., 2018). There was a need for a process change with CLCs within this pediatric organization to increase the rates of human milk received by neonates within 24 hours of discharge rates. Through the provision of support to

mothers along their lactation journey, an increase in the consumption of human milk by infants and a rise in the overall breastfeeding rates of mothers in the department would be anticipated.

Background

Lactating mothers were encouraged to breastfeed or pump for their infant's growth and development, even in the NICU, with support from lactation teams. However, demands for lactation support exceeded the hospital-based lactation availability. Nurses received pump training during orientation; however, detailed breastfeeding education was provided in a course for LSUs. These LSUs and CLCs had more training than bedside staff but lacked certification. When CLCs were present, they could assist if time allowed; however, they were not the primary consultants, causing delays in care and impacting human milk rates.

Significance of the Problem

The lack of support decreases human milk production throughout the mother-baby dyad's admission. Lactation support is instrumental in establishing breast milk supply, initiating direct breastfeeding, and maintaining human milk production (Hilditch et al., 2019). Lactation goal can be suboptimal. It is not absolute that lactation goals cannot be achieved for mothers without adequate support. Educated nurses and bedside caregivers provide lactation support to meet these goals. Human milk benefits an infant's growth, gastrointestinal function, and immunity (Aboul-Enein, 2023; Hilditch et al., 2019; Jang, 2020). As this organization strived for the best patient outcomes, there was a responsibility to provide adequate resources for lactating parents. Without the support and resources of the CLC, lactating mothers could encounter challenges achieving their lactation goals.

Human milk at discharge in this project was defined as the infant consuming human milk within 24 hours of discharge. Providing human milk has been proven to be a cost-effective,

healthy standard, and best practice for all infants within the NICU (Aboul-Enein, 2023; Alfroze, 2021). Providing human milk for neonates can offer optimal nutrition and cost-saving benefits for families. Educating families regarding these benefits can help them make an informed decision about providing human milk (Meek & Noble, 2022). Healthcare providers are expected to provide education that is evidence-based. Providing education to all families regardless of sex, racial, or cultural background will reduce bias or disparities and give everyone equal access to lactation support.

Overarching Aim of the Project

The project aimed to ensure lactating parents had adequate support for breastfeeding and pumping to increase human milk at discharge rates. Lactation support provided education on the benefits of human milk, instruction on how to work equipment, and initiation and sustain breastfeeding and pumping. Having NICU-specific CLCs or LSUs allowed dedicated 1:1 support on day one of admission and transfer, thus increasing human milk at discharge rates over 12 weeks. When a mother was educated on the benefits of human milk for her infant and instructed on how to set up a breast pump, latch her infant, and initiate breastfeeding, she was able to be successful, and she met her lactation goals. Certified lactation counselors or LSUs were used daily in the NICU to provide education and increase support in initiating and sustaining pumping to increase human milk received within 24 hours of discharge and overall breastfeeding rates.

Review of the Evidence

Providing human milk is a parent's personal choice. The CLC's role is to have the initial conversation regarding the infant's nutrition plan. Human milk is the optimal nutrition choice for all infants, especially those in the NICU (Broom et al., 2022). Continuous education and commitment by healthcare providers are essential to meet this standard and improve patient

outcomes. A comprehensive literature search using Franklin University Library resources was conducted to help answer this project's PICOT question: In a 16-bed NICU, what is the effect of implementing a unit-based lactation team on human milk at discharge rates compared with up to 48-hour wait for a lactation team consult within a 12-week period? Below is a review of the current literature to support the interventions of the project PICOT question and a critical appraisal of the relevant literature.

Breastfeeding is crucial to providing optimal infant nutrition and can have numerous health benefits for both mother and baby. Research has shown that utilizing human milk can decrease occurrences of respiratory, neurological, gastrointestinal, and ocular conditions (Broom et al., 2022; Hoban et al., 2022). To improve patient outcomes and increase human milk at discharge rates, providing lactation support to parents from the first day of admission is critical. Positive outcomes were associated with improved recovery from surgeries or procedures, decreased length of stay, and decreased risk factors related to prematurity due to providing human milk (Afroze, 2023; Broom et al., 2022; Hoban et al., 2022; Mercado et al., 2019). Lactation support has helped meet these nutritional demands of infants and improve their overall health and development. As mothers provided this nutritional support, it also contributed to the bonding process.

Due to lactation support and readily available pumps, mothers can increase pumping and pumping volumes. An increase in maternal pumping or breastfeeding postpartum is correlated with sustained human milk throughout admission and increased breastfeeding or human milk at discharge rates (Hoban et al., 2018). Providing parents with a dedicated breast pump helped meet nutritional demands and improve access to breast pumps. Decreased wait times and exclusive

access eliminated concerns of missed opportunities to pump, thus knowing that human milk would be readily available for their child.

Exclusively breastfeeding is a challenging goal but attainable with adequate support. A significant increase in the rate of exclusive breastfeeding or breastfeeding with pumping when compared to formula feeding was attributed to the provision of lactation support (Dib et al., 2022; Evans et al., 2020; Gyamfi et al., 2019; Hilditch et al., 2019; Jang, 2020). Furthermore, additional studies have reported a difference in direct breastfeeding rates among mothers who received CLC support (Aboul-Enein et al., 2023; Hasse et al., 2019; Hoban et al., 2022; Mercado et al., 2019). Therefore, it can be concluded that any form of lactation support positively influences breastfeeding rates. Consequently, a quality improvement initiative was devised to ensure the availability of a lactation support person for all patients from the day of admission.

Project Design

This quality improvement (QI) project implemented interventions to improve the rates of human milk consumed within 24 hours of discharge. The QI framework develops processes to improve patient outcomes in healthcare organizations (Center for Medicaid and Medicare Services, 2023). Due to the human milk at discharge rates for this department, it was determined that the current lactation support process was ineffective. QI interventions were implemented and tested through the Plan-Do-Study-Act (PDSA) model, and three cycles of changes were used.

The first PDSA cycle tested the core intervention of daily and weekly lactation support meetings. Parents expressed concerns that they were having multiple lactation meetings daily. The team discovered that the hospital-based lactation team was also meeting with parents via phone or in person. To mitigate duplication of services, the unit-based lactation team added a review of all lactation notes to determine if the mother-baby dyad had already been seen for the

day before proceeding with meetings. If the mother had been previously seen, the unit-based team would note that a meeting already occurred in the spreadsheet and would not meet with the pair again until the next day or week.

During the second week, the second PDSA cycle occurred in which the core intervention of exclusive breast pumps at each bedside was impacted. Charge nurses were responsible for daily audits during daily rounds. Due to charge nurses not remembering to complete audits, a visual reminder was added to the charge nurse's computer, and pre-printed audit sheets were added to the charge nurse clipboard for convenience.

The final cycle occurred during week four and was related to the daily and weekly lactation support meetings. During the project audits, it was discovered that there were days when meetings did not occur due to a lactation team member not being scheduled, a last-minute schedule change, or a call-off. These scenarios were mitigated by pre-scheduling team members and ensuring a backup team member was available.

The Ohio Health Change Management Model was used to implement this project. Communication started before the go-live date with bedside staff notification of a QI project regarding human milk at discharge. Meetings began with key stakeholders to discuss responsibilities and expectations. In-person, electronic, or virtual communication regarding the project timeline, the impact of key stakeholders, and feedback to and from the project leader and support team members occurred throughout the project.

Readiness surveys were sent to assess bedside caregiver needs and captured a barrier to lactation education in new hire orientation. Due to the lack of education support, 27% of staff took the Breastfeeding 201 internal course to provide additional education in supporting breastfeeding parents, which connected the key stakeholders to the project and gained buy-in to

the interventions. As processes changed, the Case for Change and Leadership Action Plan was modified for key stakeholders and shared among the team for transparency and accountability (Armstrong, 2023). Clear and concise communication during the project ensured that the lactation team and other vital stakeholders knew what challenges occurred, how the team would implement new interventions, and their desired impact.

Project Implementation

The designated project setting was within a level IV NICU. Obtaining Institutional Review Board approval was not deemed necessary for implementing the project from the University or within the organization overseeing the project. This project used a multi-disciplinary approach, including various healthcare professionals at the bedside, including CLCs, LSUs, and a program manager. These individuals were responsible for educating parents about the benefits of providing human milk, assisting with initiation, establishing, and sustaining breastfeeding and pumping, and offering direct access to pumps. Meetings with the mother-baby dyad took place daily for the initial seven days and then transitioned to weekly meetings until the patient's discharge.

This project encompassed parents and their premature infants admitted or transferred to the NICU within a pediatric organization located in the Mid-West, spanning an 8-week time frame. The project included premature infants directly breastfeeding or receiving a combination of human milk and formula. These infants were at least 31 weeks old and weighed 1500 grams upon admission or transfer to the NICU.

Mothers and their infants, representing diverse races, cultures, ethnic backgrounds, and sexual orientations, had equal access to lactation support. The mother-baby dyads came from various socioeconomic, ethnic, and cultural backgrounds and included mothers of different ages.

The unit-based lactation team assessed all mother-baby dyads admitted or transferred to the NICU. If parents expressed no interest in providing human milk after being informed about the benefits for both mother and infant, no lactation support was offered.

On the go-live date, the assigned lactation support person reviewed the patient list, meeting with each mother to determine if human milk was being used for their infant. If so, the child's name was added to a unit human milk list, which was regularly updated with new admissions and discharges. The unit's lactation team reviewed this list daily to identify mothers currently requiring support. Before meeting with the parents, the team member checked the hospital-based lactation team's notes to ensure the mother had not been seen that day. If necessary, CLC or LSU would spend at least 15 minutes at the bedside, assessing lactation needs and providing hands-on guidance, including setting up and initiating breastfeeding with an electric pump if needed.

The lactation team contacted mothers via phone if they were not present at the bedside. The team kept records of their interactions and scheduled support sessions weekly. During these meetings, the team focused on resolving breastfeeding or pumping issues, addressing equipment concerns, and preparing mothers for maintaining their milk supply after discharge.

The charge nurse conducted daily breast pump audits during rounds to ensure each bedside had a pump available. Even if a room was unoccupied, it was important to have a pump at every bedside daily as it promotes access and increases breastfeeding rates. For efficiency, pre-printed audit forms and visual reminders were used to prompt daily audits. These forms listed each bed number, with the charge nurse marking "yes" or "no" to indicate the presence of a breast pump. A section for notes allowed for documentation if a pump was missing. Once

completed, the forms were used to monitor compliance with the daily presence of breast pumps at the bedside.

Outcomes and Data Analysis

The data collected was analyzed using descriptive statistics over the intervention period. The primary outcome measured was the percentage of patients receiving human milk within 24 hours of discharge from the NICU. The department's goal of 80% was based on national (51%) and international (77.5%) benchmarking set by the Vermont Oxford Network (2023). The project leader analyzed data reports that extracted patients' weekly and monthly percentages going home on human milk. Data was shared with the unit lactation team and other key stakeholders.

There was an additional outcome measure and two process measures for this project, which included percentages of mothers providing milk, breast pump availability at the bedside, and compliance with lactation support meetings. With dedicated support, more mothers were expected to provide human milk to their infants. Over the 8-week project period, data was gathered on the total number of mother-baby dyads admitted breastfeeding or receiving human milk divided by the total possible mother-baby dyads admitted and multiplied by 100. This outcome measure aimed for 75% of mothers to provide their children with their milk. Achieving the 75% goal was the benchmark to measure effective implementation of the interventions.

The first process measure involved ensuring breast pumps were available at each bedside. Data was gathered daily on the adherence to pump availability in each patient room. This was the standard for the department; however, it did not always occur, as evidenced by daily audits. For this metric, the total number of beds with pumps was divided by the total number of possible beds and multiplied by 100. The desired outcome was 100% compliance to provide pump exclusivity for mothers. Mothers had pump exclusivity with the standardization of pumps as it

would give them access to the pump as often as needed, increasing breastmilk supply and sustainability.

As the lactation team met with the mother-baby dyad upon admission, the second process measure collected data on meeting compliance. The total number of compliant meetings was divided by the total number of possible meetings and multiplied by 100. Meeting with mothers was key to supporting and achieving the project outcomes. As non-compliance was identified, new interventions were implemented to mitigate barriers.

Results/Findings

Outcome and process measures were analyzed and compared to the established goals during the project period. When goals were unmet, interventions were modified or added to improve results. Below, the results and findings are presented concerning the rates of human milk at discharge, compliance with breast pump audits, and the occurrence of compliant lactation support meetings with mothers.

Human Milk at Discharge Rates

The primary goal of this QI project was to have 80% of NICU patients consume human milk within 24 hours of discharge during the intervention period. The department was close to the national benchmark, so the target was to align closer to the international rate (Vermont Oxford Network, 2022). Initial weekly rates fluctuated between 20%-100%, influenced by the availability of lactation support and parents. Starting at 47.4%, there was a 42% improvement, but it fell short of the 80% target. Nevertheless, enhanced lactation support boosted human milk utilization. Continued collaborative efforts and resource optimization are anticipated to elevate and maintain these rates over time.

Mothers Providing Human Milk

Another goal was to achieve a collective increase in the number of mothers opting for human milk provision within the department. The benchmark established for this endeavor was to have 75% of mothers providing human milk to their infants. At the conclusion of the project, it was observed that 61.3% of mothers (n=137) in the NICU had indeed provided milk, falling short of the targeted goal. However, the expectation was that, with a sustained focus on lactation support and continued discussions with mothers about the benefits of human milk for their infants, there would be a gradual increase in the percentage of mothers choosing to provide human milk over time. It is recommended that ongoing efforts be put into place to ensure the daily provision of lactation support in the NICU, thus fostering a continuous enhancement in the availability of human milk at discharge and breastfeeding rates. By consistently garnering support from senior leadership and providing project leaders with the necessary tools and resources, lactation support can be established as a standard of care within the NICU.

Breast Pump Audits

The initial process measure aimed for 100% compliance with having breast pumps at each patient's bedside. Charge nurses ensured this, achieving pump exclusivity, which was pivotal for mothers to initiate and maintain their milk supply from admission or department transfer. Audits were conducted daily. If non-compliance was noted, charge nurses corrected it immediately. Daily compliance ranged between 53%-100% throughout the project, with an overall compliance of 92.5%, falling short of the 100% goal. Non-compliance was primarily during the first week but reached 100% following procedural adjustments. Bedside staff and housekeeping were guided on cleaning pumps post-discharge and proper storage, ensuring consistency and adherence to the recommended standard of a pump in every patient room.

Lactation Meetings

The members of the lactation team were tasked with the responsibility of engaging in daily meetings with the mother-baby dyad during the initial seven days, followed by subsequent weekly meetings. The process measure goal, set at 100%, was not achieved, with the daily and weekly meeting compliance rate standing at 78.9%. There were instances where meetings with the mother-baby dyad did not occur for various reasons, including the unavailability of the lactation team or the mothers not being present at the bedside or reachable by phone. In cases where a mother was not seen, it was recommended that she be given priority for the following day.

Discussion

The project boosted human milk provision rates upon discharge, although it fell short of the 80% target. Lactation support empowered parents with education, tools, and resources, aligning with research advocating for dedicated, preferably 24-hour support (Aboul-Enein et al., 2023; Hasse et al., 2019; Hoban et al., 2022; Mercado et al., 2019). This support instilled essential skills and confidence in mothers, enhancing their success during hospitalization and beyond. Mothers received daily assistance from the dedicated lactation team, contributing to its successful implementation and positive impact on infant care in the NICU. Challenges persist in initiating immediate pumping and breastfeeding due to admissions from external hospitals. Thus, building relationships with referring hospitals is vital for a smoother transition to the NICU with an established initiation and pumping process.

Senior leaders' support enabled the department to purchase 16 breast pumps, ensuring one for each room. This exclusive access addressed concerns about the availability of breast pumps for mothers. Studies (Rosenbaum, 2022) have shown that providing 24-hour access is

associated with increased breastfeeding and pumping rates. The financial allocation guaranteed round-the-clock access for mothers, promoting exclusive pump use, and eliminating access barriers. Bedside staff also played a crucial role in ensuring that pumps remained in each room between patient discharges, showcasing a collective commitment to supporting mothers and infants.

Inadequate nursing education was a barrier to effective lactation support. The research underscores nursing's essential role in successful breastfeeding (Yang et al., 2018). Mandating lactation training for all bedside nurses became necessary. Bedside nurses provide fundamental support, while the lactation team offers expertise for complex issues. Recognizing nurses as the initial point of contact for NICU parents, it was clear they lacked the skills for effective parental education on human milk provision. Requiring all bedside nurses to complete an educational lactation course equipped them with essential tools, enhancing their teaching confidence and aligning with their scope of practice. This comprehensive approach empowers the nursing team to support and educate parents, reinforcing their commitment to promoting optimal infant care and maternal well-being.

The project's outcomes emphasize the importance of providing comprehensive lactation support to all mothers. This includes assisting them in achieving their lactation goals (Hilditch et al., 2019). To sustain departmental objectives, the unit-based lactation team drives to collaborate closely with the hospital-based team. Bedside nurses must assess mothers' interest in human milk, educate them on its benefits, and initiate pumping or breastfeeding. Complex issues will be referred to the lactation teams for expert consultation. This collaborative approach reinforces our commitment to improving breastfeeding rates and promoting human milk use at discharge, aligning with organizational goals, and enhancing the well-being of both infants and mothers.

The organization will persist in monitoring human milk at discharge with an 80% target, demonstrating the unwavering dedication to excellence and providing high-quality care and support for infants and mothers.

Summary

Providing adequate lactation support ensures that mothers and their infants are supported throughout their hospitalization. Developing a dedicated unit-based team and ensuring all healthcare providers were equipped with knowledge and resources guaranteed optimal patient and family-centered care through the patient's discharge. Collaboration within and outside the department was crucial for success, aligning with the Institute of Healthcare Improvements Triple Aim goal of enhancing parent satisfaction through increased support and improving population health (2023). Through the dedication of the nurses and lactation teams, continued positive outcomes are anticipated, including increased breastfeeding rates and higher levels of human milk consumed at discharge. As sustaining efforts continue, the team is committed to providing patients and their families with the best possible care for breastfeeding.

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