

NEONATOLOGY TODAY

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Family Centered Care Taskforce: Using Technology to Improve Discharge Preparation and NICU Parent Satisfaction

Malathi Balasundaram, MD

The Family-Centered Care Taskforce offers educational webinars every other month focusing on integrating NICU families into their infant's care. The March webinar focused on improving home transition and discharge education. To strengthen FCC in your NICU, join the listserv by scanning the QR code or clicking [here](#). Visit our [website](#) to view previous webinar recordings and resources.



Readiness for discharge from a neonatal intensive care unit (NICU) requires both the clinical stability of the infant and the parental ability to care for the infant at home. After days, weeks, or months in the NICU with full-time support from NICU staff, families can feel overwhelmed by the amount of education needed for discharge and often express distress about their ability to assume total care of their infant. Families feeling inadequately prepared for discharge with their high-risk infant contributes to poor infant outcomes, heightened family anxiety, and increased healthcare utilization after discharge. Quality of discharge teaching has proved to be the strongest predictor of discharge readiness.

“High-risk infants hospitalized in the NICU often receive life-saving interventions during a critical development period when their brain is susceptible to positive and negative environmental factors. This time is particularly challenging for families.”

We implemented a discharge education improvement process as a part of a family-centered care program (FCCP) quality improvement work in 2017 at El Camino Health (ECH) NICU. ECH is a not-for-profit acute care hospital in Santa Clara County, California. The 20-bed, community-level 3 NICU has approximately 4200 newborn deliveries and 450 NICU admissions per year. The ECH NICU can care for infants from 23 weeks gestational age (GA) and those infants with severe or complex illnesses.

We aimed to improve the % of parents who selected “prepared for discharge,” top box score (a response that reflects the highest possible rating, from a baseline of 47% in 2017). We used technology to improve the consistency of discharge teaching, starting on admission rather than waiting until the last few days of hospitalization. Our ECH FCCP formed a Comprehensive Discharge Teaching Taskforce (CDTT) to explore ways to improve our discharge process and increase parental feelings of preparedness and satisfaction. The CDTT comprised neonatologists, nurses, unit administrative support, the NICU clinical nurse specialist, the NICU nurse manager, and members of our family advisory board (FAB).

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Intervention 1: e-Book Discharge Education

Our initial process improvement was to move all education content to an electronic format for parents. In 2017, the CDTT wrote unit-specific education topics and created videos of staff demonstrating hands-on skills such as mixing formulas, medication administration, and bulb suction use. We converted the educational content into an e-book via the iBooks Author application (iBooks is a registered trademark of Apple Inc, Cupertino, California). The e-book had an easy-to-navigate table of contents and options to bookmark topics parents needed to review. The e-book was uploaded onto three tablets donated by former NICU parents. Parents could use our tablets during their time in the NICU to review the discharge education content in the e-book at their own pace.

CDTT developed a paper discharge teaching checklist to match the education content in the e-book and electronic health record (EHR) (figure 1). Upon NICU admission, the checklist was placed at the bedside. We did not include hospital readmissions or short-stay babies as the discharge education content was deemed too

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extensive for parental review during a short NICU stay. This initial process was developed to provide consistent educational material, allow families to review information conveniently, and start education earlier in their NICU stay.

Intervention 2: e-Book Improvements

Based on qualitative feedback from nurses during the intervention, we recognized that readmitted families often needed consistent and in-depth discharge teaching due to truncated, rushed discharge preparation during their birth admission. We also found that nurses primarily focused on breastfeeding education with short-stay infants, so other education topics should have been included or done at the last minute. Therefore, during intervention 2, we included readmitted infants and infants with a length of stay of less than 48 hours, placing a paper discharge checklist at their bedside and encouraging parents to review the e-book discharge education. In addition, to facilitate ease of access to discharge education, we published the content on the hospital website for parents to access from home even after discharge. Staff and phy-

sicians provided the website link to parents in written discharge instructions.

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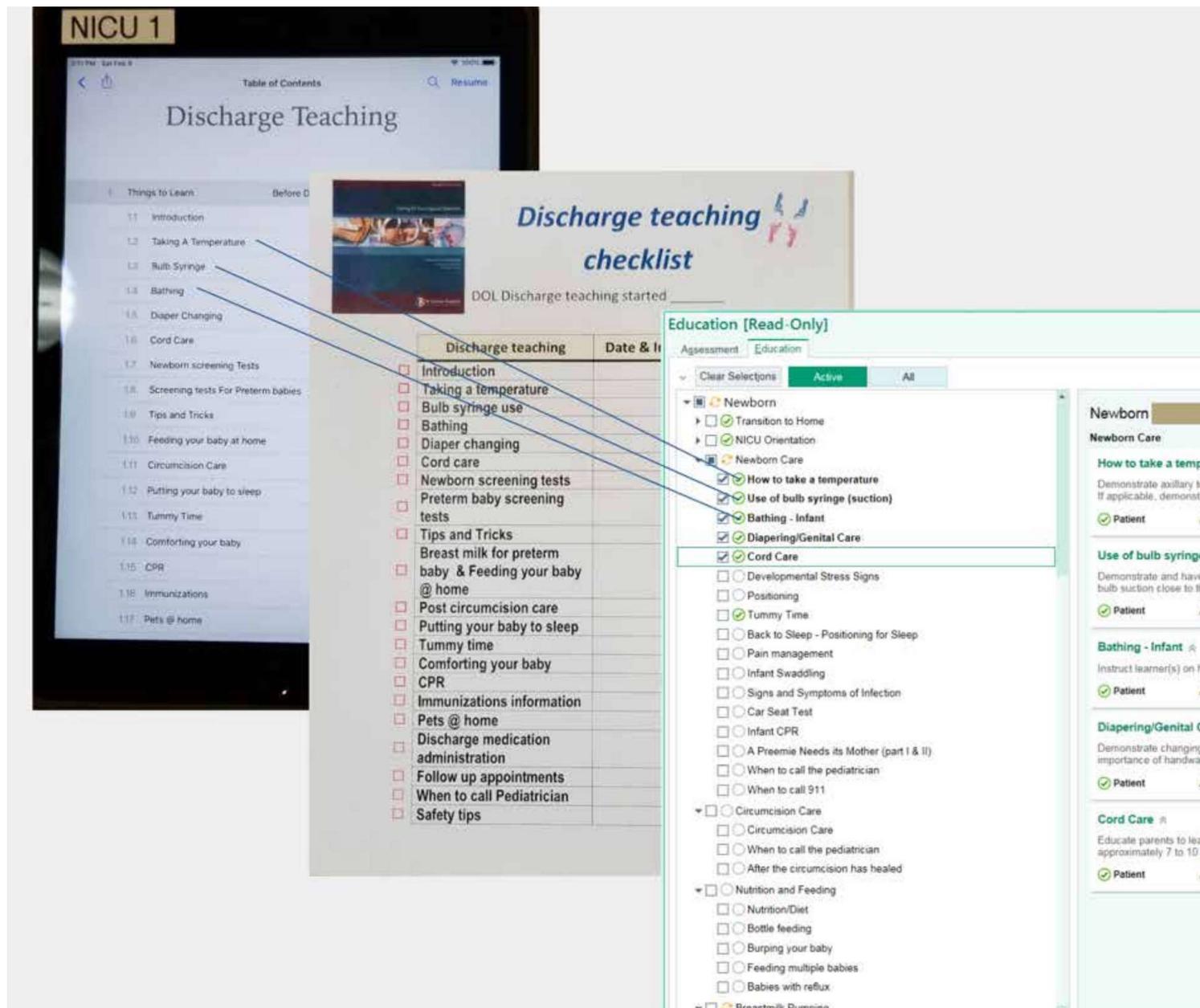


Figure 1:

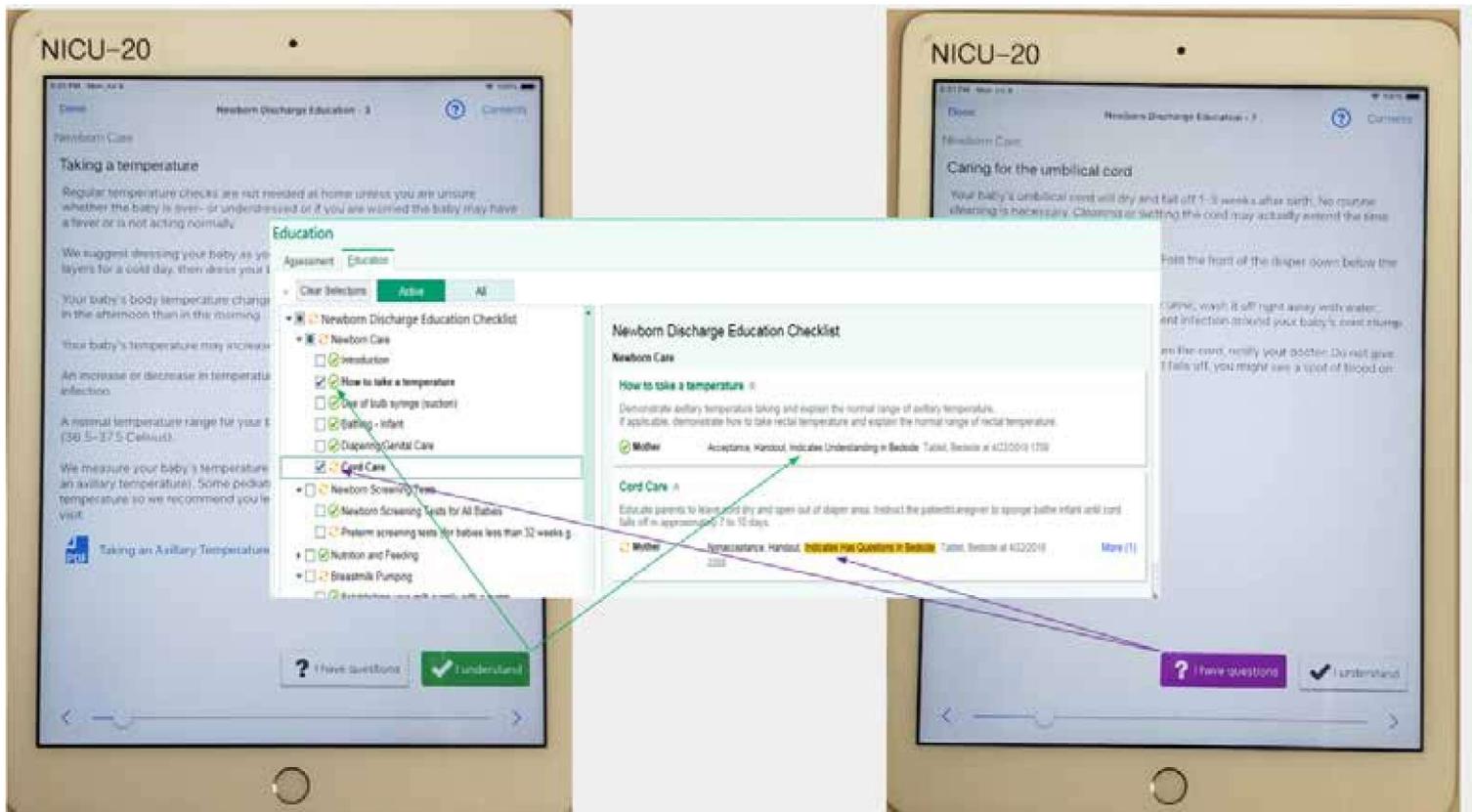


Figure 2:

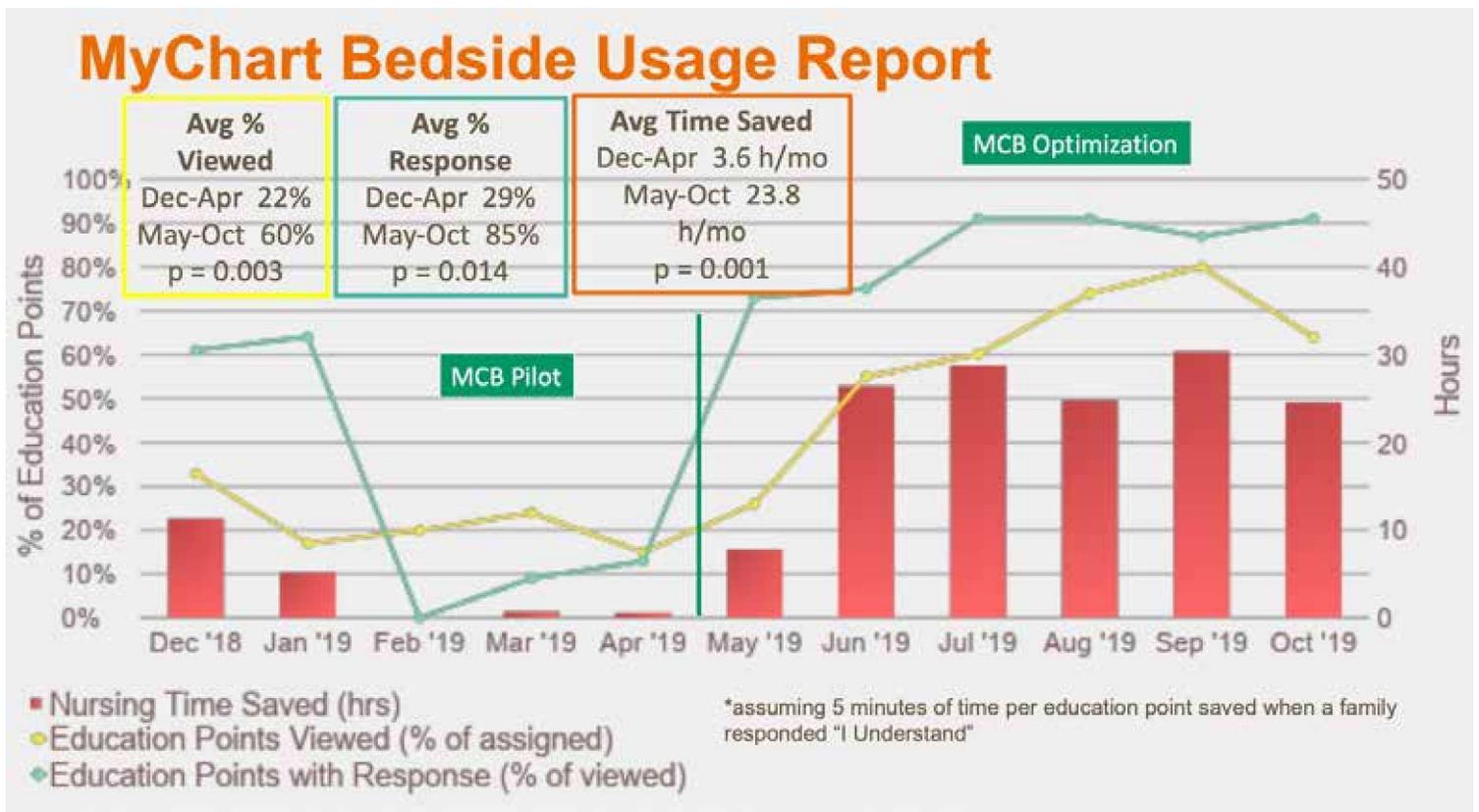
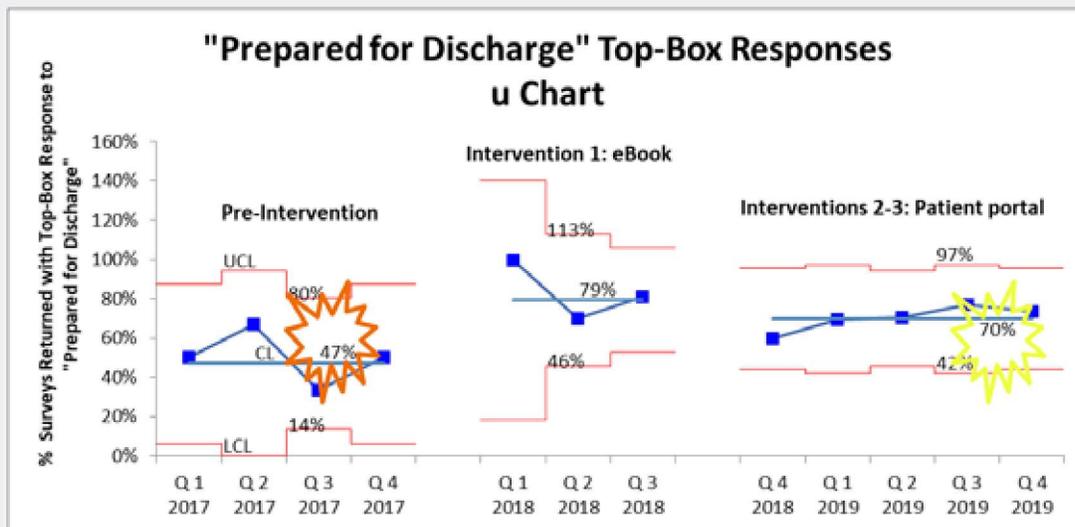


Figure 3:

Post Discharge Survey: "Prepared for Discharge"

Relative 50% improvement!



Top box analysis (percentage of responses that reflect the highest possible rating) of parent responses to patient satisfaction survey question regarding preparation for discharge from NICU

Figure 1:

Intervention 3: Integration of the e-Book into the EHR Patient Portal

In November 2018, the ECH NICU was chosen as a pilot unit for our hospital's MyChart Bedside implementation, which gave us an unexpected opportunity to further expand our QI work by transferring our e-book to the inpatient portal. Our EHR, Epic Systems Corporation (Verona, Wisconsin), has education modules built into both the inpatient portal (MyChart Bedside) and an outpatient portal (MyChart). MyChart Bedside (MCB) allows patients to view parts of their EHR online during an inpatient hospitalization. Once MCB was launched, IT provided 20 iPads (one for each bed). Parents could also use their devices from home and scan the QR code from EPIC for full access. In addition to reviewing education, NICU families could view their infants' vital signs, medications, laboratory results, and treatment teams in MCB.

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Intervention 4: Optimization of My Chart Bedside

In previous interventions, nurses manually assigned the discharge education in EHR, which was found to be inefficient. With the help

of an EPIC physician builder and IT analyst, we automated the assignment process using Best Practice Advisory (BPA). Parents reviewed the information on the iPad on their own time and checked a box to indicate whether they "understood" or "had questions." These indications flowed directly into the EHR so nurses could see them (Figure 2). Nurses reviewed this information regularly and encouraged parents to complete their education. In this intervention, we also translated the materials into Spanish and ensured parents received the appropriate language education materials.

Intervention 5: Families and Nurses' Response

We reached out to 159 families through our post-discharge follow-up phone calls. 92% of the families liked this education system; comments included: "it was very informative, simple, smooth, easy to follow," "I enjoyed the streamlined discharge process," and "it was a good refresher for experienced families." Nurses shared that the training and education on MCB improved the workflow for families on the day of discharge and made teaching easier for parents as they had seen content previously and could ask better-informed questions. Nurses also liked the consistency of teaching content and how easy it was to keep track.

Results:

We improved the percentage of families engaging with discharge educational materials in MCB from 29% during intervention 3 to 85% during the optimization phase. Assuming 5 minutes of nursing time per education point saved when a family responded, "I understand," we saved an average of 24 hrs/month of nursing time during intervention 4 (Figure 3). While this program is not designed to replace bedside teaching, allowing families to explore content beforehand reduces confusion and ensures that time spent with the family is individualized to their needs and questions. We also improved the % of parents who selected "prepared for discharge," Top box score (a response that reflects the highest

possible rating), from 42 % in 2017 to 70% in 2019 (Figure 4) and, not shown, further enhanced the % to 78% in 2022.

Discussion:

Families received consistent information that began early in their NICU stay, indicated they felt better prepared for discharge, and had the opportunity to ask questions. Nurses saved time and felt that families were more consistently provided with the right tools to transition home successfully. The FCC team created a yearly refresher orientation checklist and continues to provide one on one orientation to new staff and rotating trainees. Additionally, the program content is easy to update based on feedback/changes in the unit as needed. While implementing this project, we encountered a few challenges: physicians' time commitment in writing the eBook, formatting, uploading, and building EHR best practice advisory, and IT concerns about losing iPads.

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Conclusion:

Our goal is for families to feel well supported during their NICU journey and to better prepare them for discharge by delivering clear, concise, and consistent information. We recognize the importance of discharge readiness and guiding families through discharge preparation, starting at the time of NICU admission. We have learned much about using technology to support families and enhance discharge education. We anticipate more NICUs creating multidisciplinary teams and using patient portals for family education.

Acknowledgments:

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