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# Technology-Enabled Lactation Support for Neonatal Intensive Care and Beyond

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Breastfeeding is highly beneficial for infants within the NICU and other intensive care settings, promoting growth, enhancing neurodevelopmental outcomes, and reducing the risk of complications such as necrotizing enterocolitis (NEC). Yet, NICU parents encounter significant obstacles in establishing a successful breastfeeding journey, including prolonged separation from their infants, inconsistent breastfeeding support, birth complications, and NICU-related stress. These factors, coupled with breast-pump dependency, can contribute to difficulties in reaching the same target milk volumes as mothers of healthy, term breastfeeding infants.<sup>1</sup>

Technology can enhance family engagement and provide consistent, personalized lactation support to parents of infants in intensive care settings, empowering them to surpass these obstacles. By tracking lactation progress, giving access to virtual breastfeeding support and educational resources, and providing opportunities for connection, healthcare providers can offer well-timed guidance that supports mothers throughout their breastfeeding experience.

This article explores key strategies for technology-enabled lactation support and highlights how AngelEye Health's family engagement platform can help lactation professionals implement these strategies.



**Figure 1.** The six key elements in the lactation journey supported by AngelEye's platform.

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## Strategies for Technology-Enabled Lactation Support

Technology can improve access to lactation support for parents with infants in NICUs and other intensive care settings. Live-stream video can increase milk production by connecting parents virtually with their infants. Mobile apps that track breastfeeding sessions and pumping trends help parents monitor progress. Tele-lactation services connect families with lactation consultants for remote consultations, personalized pumping plans, and ongoing support.<sup>2</sup>

## Providing Meaningful Insights

External validation was key in parents' perception of their breastfeeding journeys.<sup>3</sup> Additionally, pumping logs have been associated with increased ratios of breast milk feedings, with exclusive breast milk feedings reducing the number of days Very Low Birthweight (VLBW) infants spent NPO (nothing by mouth).<sup>4</sup> By utilizing electronic pumping diaries, technology can create added value for parents. Viewing reports or session logs can act as a form of external validation for these parents and a starting point for more in-depth conversations with lactation professionals.<sup>5</sup>

## Access Beyond the Bedside

Technology supports and delivers education to families even when they are not physically present in the ICU. Virtual family engagement technology enables parents to remain an integral part of the healthcare team, allowing them to receive updates on their baby's progress and communicate more frequently with healthcare providers. These types of technological tools are an effective way to educate parents and increase parental self-efficacy.<sup>6</sup> Additionally, facilitating remote lactation support has been demonstrated as an effective intervention for increasing breastfeeding in the NICU.<sup>7</sup>

## Equity for All Families

For families whose primary language is not English, the inability to directly communicate with healthcare providers in their preferred language can create significant obstacles to receiving adequate updates and lead to heightened parental stress.<sup>8</sup> These communication barriers can be particularly challenging for parents trying to breastfeed or pump for their baby. However, family engagement technology can be crucial in bridging this communication gap and providing much-needed support to these families.

Applications with translation capabilities can facilitate real-time communication between parents and healthcare

providers, allowing for more effective and culturally sensitive conversations about breastfeeding. Additionally, online resources and educational materials can be translated into multiple languages, making them accessible to a broader range of families. By leveraging these technological tools, healthcare providers can better support non-English-speaking families in their breastfeeding journeys, fostering a sense of inclusivity and reducing parental stress, ultimately improving overall health outcomes.

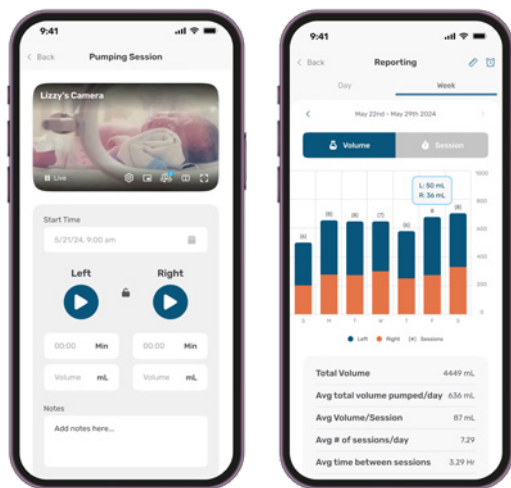
## Envisioning Technology-Enabled Lactation Support with AngelEye Health

Developed with insights from clinicians and lactation professionals, AngelEye's Family Engagement Platform offers several technology-driven solutions that can be leveraged to support lactation and improve the breastfeeding experience for families with infants in the NICU or other acute and intensive care settings.

### Pump Session Tracking

The integration of pump session tracking into AngelEye's platform streamlines the data collection process for both parents and healthcare providers, enhancing lactation support by:

- **Camera Connection:** Viewing their child's live-stream camera during pump sessions can increase parental bonding and boost milk production.<sup>9</sup>
- **Consistency with Reminders:** Pumping reminders allow parents to set a "pumping goal" for the number of pump sessions in 24 hours and receive automated reminders to help them meet their goals and maintain consistency.
- **Session Logs and Reporting:** Parents and staff can easily track milk supply trends and inventory levels to better support and encourage mothers' own milk production with informed guidance.



**Figure 2.** Parent's view of MilkTracker, tracking pump sessions and monitoring milk output.

### Multi-modal Pathway for Education

Using varied education methods and modalities for delivery has been demonstrated as an effective way to improve education outcomes for NICU families.<sup>10</sup> Within the AngelEye platform, several features exist to help disseminate the correct information to parents at the right time:

- **Multi-media messaging:** Allows lactation professionals to share unit-curated resources such as flyers for lactation clinics and photo or video messages.

- **Education Content:** Empower and inform families with customized education supporting breast milk production and breastfeeding, featuring video content and articles that remain accessible to parents beyond their child's discharge date.
- **Built for Equity:** With translation into 70+ languages and content aimed at a 5th-grade reading level, AngelEye's platform seeks to remove barriers to health literacy, making breastfeeding support accessible to all families.

### Personalized Support

Emotional support from the community and external validation play a key role in parents' perception of their breastfeeding journeys.<sup>4</sup> In challenging intensive care environments, lactation professionals can utilize the following features to assist in meeting these needs:

- **Announcements for Support Groups:** Announcements allow lactation professionals to share reminders about in-person support groups with parents by pinning information to the parents' home screen within the AngelEye app.
- **In-app Conversations:** Combined with AngelEye's translation capabilities, two-way messaging allows for lactation consultation to extend beyond the bedside and past language barriers so all parents have dedicated support from a lactation professional.
- **Actionable Surveys:** Automated, adaptable assessments inform real-time, personalized care adjustments and clinical feedback to enhance outcomes and satisfaction.

### Milk Management and Inventory

AngelEye's MilkTracker Feeding Management solution prioritizes safety at every step of the feeding process and offers families informed ownership in milk management. Several features can be utilized to support the safety and efficacy of milk management:

- **Enhanced Safety:** Recipe calculation, barcode scanning, and product-tracking offer safer patient feeding administration<sup>11</sup> and are all features available in the MilkTracker solution. With parental stress increased in the unfamiliar NICU or other intensive care environments, enhanced safety can help palliate parental anxiety.
- **Milk Inventory Alerts:** By providing parents with updates on the mother's milk inventory at the hospital, technology can help parents balance the transport of breastmilk to the NICU with their competing external responsibilities to promote parental well-being.<sup>12</sup>
- **Self-Serve Printing for Parents:** With self-service label printing, parents can independently print pump/parent labels for their baby without assistance from clinicians or staff, removing one common pain point for parents transporting breast milk to the ICU.

### Envisioning the Future: How AI and Technology Could Transform Lactation Support Across Care Settings

Advancements in AI, sensors, cameras, algorithms, and predictive analytics offer transformative potential for lactation support across the NICU, pediatric units, and during the transition to home. These technologies could personalize care by analyzing real-time data on milk production, pumping frequency, and infant feeding patterns, enabling tailored recommendations for optimized milk production. Predictive analytics could proactively identify lactation issues, prompting timely interventions like remote consultations or schedule adjustments, reducing risks, and improving infant and family outcomes.

AI-enhanced tools could further improve lactation support with virtual consultations, real-time monitoring, and data integration. By analyzing live-streamed video, AI could detect issues such as improper latching or pump difficulties, triggering immediate feedback from lactation professionals. Additionally, AI-powered systems could streamline milk tracking and inventory management, ensuring safety and efficiency. Real-time translation and personalized educational content would also help bridge language barriers, making lactation support more inclusive. As AI and technology evolve, these innovations will provide continuous, data-driven care, ultimately enhancing breastfeeding outcomes and strengthening the parent-child bond across all care settings.

## Conclusion

AngelEye Health's suite of technology solutions—MilkTracker, NICU2Home, CameraSystem, and pump session tracking—play a pivotal role in enhancing lactation support for families in the NICU, PICU, and other intensive care units. By improving parent engagement, fostering emotional connections, and ensuring real-time monitoring of breastfeeding efforts, these tools significantly contribute to better breastfeeding outcomes, higher parental satisfaction, and improved infant outcomes across various care settings. As technology evolves, AngelEye's solutions will remain at the forefront of improving lactation support, ensuring families in NICUs, pediatric units, and critical care areas receive the best possible care throughout their journey.



## ADVANCING. INNOVATING.

The leading provider of technology solutions  
for the NICU of tomorrow.

Our suite of solutions empowers families while streamlining workflows for care teams, fostering connection throughout the NICU journey. In 2025, we are advancing our solutions with innovative features that will shape the NICU of the future for better outcomes for neonates and their families.



To explore how AngelEye Health's Family Engagement Platform can support lactation efforts in your hospital, visit [angeleyehealth.com](https://angeleyehealth.com).

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