

Mission Possible: Keeping Families Connected During COVID-19 Pandemic

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For families with infants in the neonatal intensive care unit (NICU), providing a means for them to view live video of their infants, any time of the day or night, and while they are away from the unit, can help alleviate the stress of the experience. Restricted access for visitations to the NICU, especially during the COVID-19 pandemic, poses an additional challenge both to parents and extended families who cannot visit their child for an extended period. This article focuses on parents' perception and satisfaction using a web-based camera system (NICVIEW) from a tertiary care NICU during the COVID-19 pandemic.

Innovative technology is being increasingly used in healthcare settings.¹ The use of live-stream video to enable virtual visits in the NICU is slowly gaining popularity.² Improving the patient and family experience in NICU is difficult and presents many challenges in the critical care environment.³ The birth of a premature infant, who gets immediately separated from its mother whom has already developed a prenatal attachment to her unborn child, could elicit very distressing emotions that may be difficult to manage in the immediate postpartum period.⁴ Family-centered care (FCC) in the NICU focuses on building trust, reducing anxiety, partnering, and integrating with families into the care of their infants. Many newborns in NICU have critical health issues causing anxiety and feelings of fear to parents and families. Separation, especially in life-threatening conditions, causes worry and apprehension among families. Providing a means for families to view live video of their infants, any time of the day or night, and while away from the unit, can help alleviate this stress. Families face financial and emotional difficulties when a newborn

is not medically stable and has to stay in a NICU for a prolonged period.⁴ With globalization and the demands of jobs, parents may not be together to support each other throughout the baby's stay in NICU.⁴ This gets especially difficult for first-time parents when there is a need to make critical decisions about the care of their sick newborn. Restricted access for visitations to the NICU, especially during the COVID-19 pandemic, poses an additional challenge both to parents and extended families who cannot visit the infant for an extended period of time. Virtual visitation of the family members has been used in a few NICUs in the USA and UK even before the COVID-19 pandemic.^{3,5-7} NICVIEW is a web-based camera system (WBSC) that streams real-time video of the baby around the clock when mounted to the baby's bed. To the best of our knowledge, we are the first center in Canada to utilize this service in the NICU setting. In this article, we share the perception of parents and their satisfaction using NICVIEW during the COVID-19 pandemic.

Our NICU is a 48-bed advanced tertiary care center in Saskatchewan, Canada. All babies have private rooms where parents can stay with their neonates 24/7. We care for in-born neonates and out-born neonates, referred from peripheral centers across central and northern Saskatchewan. Our transport team covers nearly 465 300 sq. km, using both land and air transfers. Extreme preemies and complex surgical babies often require a prolonged hospital stay over many weeks or even months. This poses challenges for families who travel long distances to see and spend time with their infants. Traveling great distances on snowy and icy roads during winter is often challenging. Northern communities especially have little access to transportation and

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Figure 1: Web-based camera system (NICVIEW) over neonates in the NICU.

often have seasonal limitations to when travel can be facilitated. The resulting parental separation among families and infants becomes a complex issue. Promoting parental-newborn bonding was difficult, and families felt disconnected from their infants following delivery. This separation frequently triggers stress, anxiety, and financial tension and alters feelings associated with bonding. This geographical challenge was an important motivating factor when innovations were being considered in our center to assist in partnering and integrating families. Using a WBCS was a natural fit to address this issue and was implemented as a quality improvement initiative [Figure 1].

Parents and siblings of newborns, who were unable to visit due to infection-control measures in the NICU due to COVID restrictions, could

virtually meet the new addition to their family via WBCS. It also helped parents get back to responsibilities at home. This service was of much use to working fathers and grandparents who were not allowed or could not visit during the lockdown period. Parents used the cameras to introduce their infants to family members and friends living in Canada and across the world. Family members residing out-of-city or out-of-province and in some instances out-of-Canada used it the most [Figure 2]. The ability to view their infant when away from the bedside provided a sense of support and contributed to the emotional attachment of parents, siblings, family members, and friends.

We currently own about 30 cameras, which streamline real-time videos of babies admitted in our NICU to any handheld mobile/tablet device or

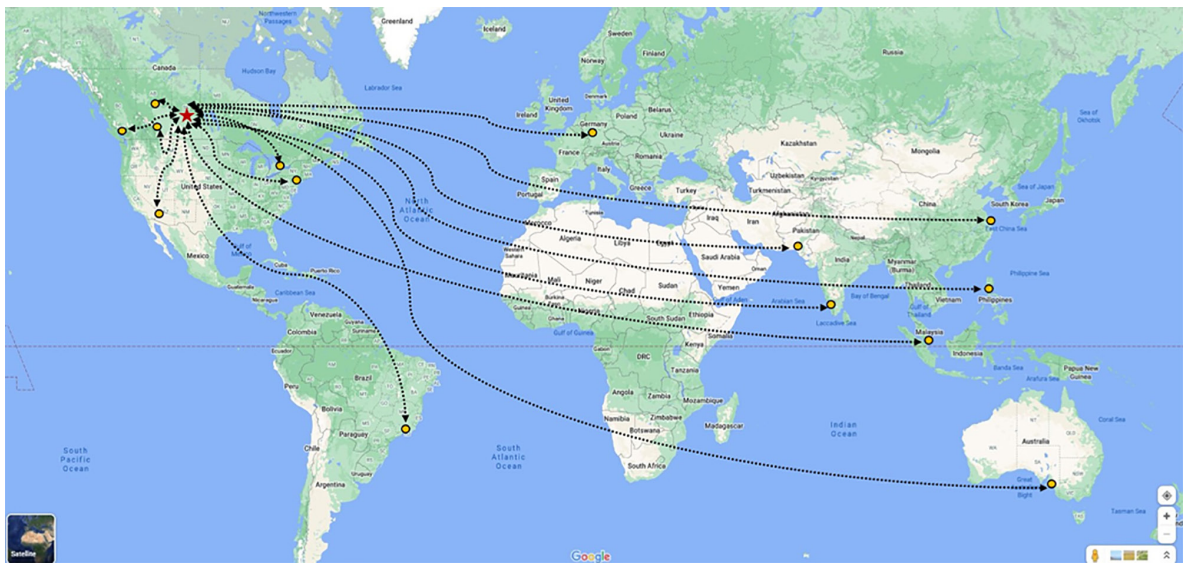


Figure 2: Countries from where our NICVIEW cameras were accessed during the COVID-19 pandemic.

Box 1: A few comments from the parents who utilized the web-based camera service.

"Grandparents living far away loved it! They call it 'Baby TV' and helps them feel connected."

"My wife isn't very mobile due to complications after delivery. It helped her and our family big-time."

"Great service for terminally-ill grandparents who live in other provinces and unable to visit."

"It helped us greatly and gave us peace of mind to know that our baby was healthy and doing well."

"My husband lives in (Country X), and he cannot travel due to COVID-19 travel restrictions. He is stuck there until the travel ban gets lifted. The camera helps him to see the baby round-the-clock."

"We love the camera feature, and I strongly recommend it. When my husband is away at work for a week and unable to visit the baby, the camera greatly helps him."

"Looking at my baby via camera while breast pumping helped increase my breastmilk production over a period of days."

"It's a great asset for me and my elder daughter. She was able to see her baby brother and get connected much before I could take him home. Loved this idea!"

"We can see if an intravenous line has been put in or if there are any physical or treatment changes, we can call and ask if concerned."

"Our family loved it, and we very much appreciate having this camera service free-of-cost. We used it often, and it provided great reassurance. Thank you!"

computer, across anywhere in the world where an internet service is available. Before purchase of these devices, the local health region privacy and access officer and information-technology representatives were engaged in discussions concerning the security of the WBCS and determined it was a viable and safe option for our facility. Privacy measures to safeguard families and infants were our topmost priority. Printed materials and information on the cameras were posted in family spaces in the NICU to elicit interest from parents. Training for activation and deactivation of the cameras were given. Written consent was obtained from the parents before installing the web camera service. Individualized, secure usernames and passwords were given to parents. Camera use, access, and passwords were the responsibility of the parents, and their distribution to family and friends was at their discretion. Live video streaming without audio is the only available option, and the streams cannot be recorded. There were no costs to the parents for availing this service.

Approximately 180 families used the NICVIEW[®] service between March and December 2020 (during the ongoing COVID-19 pandemic) and had nearly 39 000 logged-in hours. The extent of camera use itself is an excellent assessment of value provided to families and demonstrates how this technology has significantly changed how families feel about leaving the hospital while their infants remain in the NICU.

Concerns of web-cameras increasing nursing workload were alleviated by the high-quality technical support offered by the service provider. If the camera was not positioned properly, parents were instructed to call the technical support number. The bedside nurse paused the cameras during care and

clinical procedures. During such times, the viewers receive an alert indicating that the nurse is caring for their baby and to check-back shortly for resumption of the live-feed video. Technical support (available round-the-clock) could remotely move the camera lens and bring the infant into view. The technical support team would also follow-up and remind the bedside nurse to un-pause the cameras when occasionally nursing staff overlooked restarting the cameras post-care. Frequently reported concerns were on the positioning of the camera, like incorrect camera placement that did not offer a good view of the baby and the need to call nurses to turn on or adjust the camera after care.

A feedback form was given to parents that included a couple of open-ended questions to express their opinions on the service provided. Of the first 100 respondents who completed the questionnaire, 70.0% were mothers. Almost all parents used the service regularly. Thirty cameras were accessed > 7000 times by respondents during the 10-month study period. Every parent who used the WBCS felt that NICVIEW[®] was easy-to-use and strongly recommended it to other parents; 98.0% of parents felt very connected with their baby, and almost 90.0% of parents reported having the WBCS helped reduce their anxiety and stress levels to a great extent. An accepting attitude from healthcare professionals, especially the nursing staff, towards the camera use played an essential part in the successful implementation of NICVIEW[®] in our NICU. It is essential to select a device that requires minimal nursing intervention and does not increase their workload. Some feedback from parents is listed in box 1.

One parent interestingly mentioned: “*At times I felt stressed and anxious watching my premature baby who was sick and especially at nights, I would frequently sign-in to check on her. If she was up, I would sit all night watching her. I would think the camera would be great for me when she is a bit bigger and stable (not so sick).*” In this situation, heeding to the father’s request for the mother to get adequate sleep, the NICVIEW camera was removed and reinstalled a few weeks later.

From still photographs to 24/7 live video feed of neonates, web cameras and technology in the NICU are an ever-changing and ever-improving realm.² The sudden shift in the visitation policy at the onset of COVID-19 pandemic led to the need to foster family connections. This crisis can lead to the transformation of health services and open the way for the long-term adoption of new practices, enhancing efficiency, and quality of care. WBCS is a good alternative to bridge the physical gap and promote bonding to families who were asked to reduce hospital visitation and living in ‘lockdown’ situations. Also, these findings are important to consider when NICUs want to install WBCS in their unit. Future research should continue to explore web camera use in NICUs.

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