




# The Impact of Restrictive Family Presence Policies in Response to COVID-19 on Family Integrated Care in the NICU: A Qualitative Study

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## Abstract

**Objectives:** To conduct a needs assessment with families and their healthcare team to understand the impact of restrictive family presence policies in the neonatal intensive care unit (NICU) in response to COVID-19. **Background:** In response to the COVID-19 pandemic, significant restrictive family presence policies were instituted in most NICUs globally intended to protect infants, families, and HCPs. However, knowledge on the impact of the stress of the pandemic and policies restricting family presence in the NICU on vulnerable neonates and their families remains limited. **Methods:** Individuals were eligible to participate if they were a caregiver of an infant requiring NICU care or a healthcare provider (HCP) in the NICU after March 1, 2020. Semi-structured interviews were conducted using a virtual communication platform, and transcripts were analyzed using inductive thematic qualitative content analysis. **Results:** Twenty-three participants were interviewed (12 families and 11 HCPs).

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Three themes emerged: (1) successes (family-integrated care, use of technology), (2) challenges (lack of standardized messaging and family engagement, impact on parental wellbeing, institutional barriers, and virtual care), and (3) moving forward (responsive and supportive leadership). **Conclusions:** Our findings highlight the significant impact of family restrictions on the mental well-being of families, physical closeness with parents, and empathetic stress to HCPs. Further study of potential long-term impact is warranted.

### Keywords

neonatal intensive care, COVID-19, qualitative, family-integrated care, presence

In response to the COVID-19 pandemic, significant restrictive family presence policies were instituted in most neonatal intensive care units (NICUs) which intended to protect infants, families, and healthcare providers (HCPs; Bembich et al., 2021; Darcy Mahoney et al., 2020). These restrictions meant that families who stayed in the NICU with their infant(s) lacked access to their usual social support systems and were isolated from their other children at home, partners had little to no access to their infant, and in-person teaching was only available to the one family member. Providing education to families was increasingly difficult due to increased task demands, infection control protocols, and families' higher stress levels.

Strong parental presence, providing familiar sensory inputs, and family-integrated interventions, such as skin-to-skin contact, in the NICU has been shown to improve outcomes of vulnerable preterm infants and their families, while easing the burden on the healthcare system (Baley & Committee on Fetus and Newborn, 2015; Cheng et al., 2019; Franck & O'Brien, 2019; Jiang et al., 2014; O'Brien, Lui, et al., 2018; O'Brien, Robson, et al., 2018; Tandberg et al., 2019). Family-integrated care (FICare) is a family-centered care philosophy which extends the concept of families being the center of care to families being more fully integrated in care. The primary tenets of FICare promote "parental engagement, learning, shared decision making, and positive parent-infant caregiving experiences" (Franck et al., 2020; O'Brien, Robson, et al., 2018). Reported benefits of FICare include increased parental self-efficacy, exclusive breastfeeding upon discharge, improved parent-infant relationships,

improved infant developmental outcomes and weight gain, and reduction in parental stress and anxiety (Bryanton et al., 2013; Cheng et al., 2019; Franck et al., 2020; Franck & O'Brien, 2019; Jiang et al., 2014; Kim et al., 2020; Monaghan et al., 2020; Negron et al., 2013; Shorey et al., 2014; Tandberg et al., 2019).

Some evidence has emerged showing that compared to the population norm, maternal depression and anxiety have been elevated during COVID-19 (Lebel et al., 2020) and that pandemic-related policies restricting family presence in the NICU has been associated with adverse outcome for neonates, their families, and staff (van Veenendaal et al., 2021). However, our knowledge on the impact of the stress of the pandemic and policies restricting family presence in the NICU on vulnerable neonates and their families remains limited. The aim was to explore the experience of NICU families and their HCPs to understand the impact of the COVID-19 restrictive family presence policies in the NICU on FICare.

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### Method

#### Design and Setting

A qualitative descriptive approach research design was used. The study was conducted at a



**Figure 1.** IWK Health neonatal intensive care unit (NICU) floor plan with typical NICU room and view of nursing station.

Level 3–4 NICU in Halifax, Nova Scotia, located in Eastern Canada. IWK Health is a perinatal and pediatric university-affiliated tertiary referral facility providing services to Nova Scotia and two nearby provinces, with approximately 800 admission (in-born and out-born) to the NICU per year. The 40-bed unit consists of single-family rooms with a designated sleep space, bathroom, and shower (Figures 1 and 2). The unit culture is underpinned by a strong FICare philosophy. The NICU team is multidisciplinary, including bedside and advanced practice nurse and nurse practitioner and nurse specialists, physicians, and allied health, including pharmacists, dietitians, social workers, lactation consultants, and physical and occupational therapists. Prior to the pandemic, parents, siblings, and other designated support people had unrestricted, 24/7 access to the NICU per the unit FICare unit philosophy (Franck

et al., 2020; O’Brien, Robson, et al., 2018). During Wave 1 (March–June 2020), the restrictions allowed only one support person, who was not allowed to leave the hospital, to be present with their infant. Siblings and extended family were not permitted. Some relaxation occurred between Waves 1 and 2 allowing other designated support people to be present 1 week at a time. They could redesignate who was present each week. Some exceptions were granted if patients were palliative or very ill. Medical rounds were adapted to be partially virtual during the COVID-19 pandemic. The families who were present remained in their infant’s room, the HCPs who were present conducted rounds from the doorway of the room, and the families and HCPs who were not present in the NICU could join via phone or videoconferencing on a transportable system which the HCPs brought with them to each room. Families



**Figure 2.** Images of a typical IWK Health neonatal intensive care unit single-family room.

communicated with each other using either their own personal devices or iPads provided by the NICU.

### Participants

Eligible individuals were families of NICU infants post-March 1, 2020, who experienced restrictive family presence policies. HCPs in the NICU were also eligible to take part. Both families and HCPs were eligible since the restrictions affected both groups, and both perspectives were important to fully understand the impact of the restrictions. All participants had to read and speak English. Participants were recruited using posters in the NICU, word of mouth from the study team and social media posts. At first, convenience sampling was used, followed by targeted sampling to ensure a diverse sample, including underrepresented and equity seeking groups, until saturation was reached. We did not capture if the HCPs who participated directly care for any specific family who participated. Throughout this article, the term “family” represents caregivers in the NICU, including but not limited to parents, support persons, or guardians; “support network” includes the people outside of the NICU who support the family member(s) in the NICU with their infant;

and “HCPs” refers to all care providers who are part of the NICU care team.

### Procedures

The corresponding author, with previous experience in qualitative interviewing, conducted the focus groups and individual semi-structured interviews with families and HCPs, separately. Two additional researchers were present in the interviews—one for note taking and one learner. Focus groups were used unless individual interviews were requested by the participants. A research coordinator was responsible for recruitment, including establishing a relationship with the participants prior to the study commencement and describing the study purpose. The semi-structured interview guides for families and HCPs were created from existing literature and expert input from the research team (parent partners, neonatal clinicians, administrators, and researchers). Interviews were conducted virtually via the Zoom platform using password protected logins with only the participants and researchers present. Sessions were between 40 and 60 min and were recorded and transcribed, and researchers took notes.

## Analysis

The interviews and focus groups were analyzed using inductive thematic qualitative content analysis (Elo & Kyngäs, 2008) using NVivo Version 12 by two independent reviewers who categorized findings and identify themes. The family content was analyzed first, followed by the HCP content, then the two groups were compared. Disagreements were resolved through consensus or a third reviewer. To ensure credibility of findings, themes were reviewed by the first author who has had prolonged engagement and persistent observation in the environment and is familiar with the setting and context (Korstjens & Moser, 2018). To ensure dependability, confirmability, and auditability, detailed notes were taken throughout the process to ensure that methods could be replicated. However, given the different restriction policies in different units and the variation in COVID-19 epidemiology over time, the experience of families may now differ. Nevertheless, by providing quotes and description, readers can consider the element of transferability to different contexts (Korstjens & Moser, 2018).

## Ethics and Informed Consent

Ethical approval was received through IWK Health prior to recruitment. All participants provided informed written consent prior to participation. All interviews were deidentified prior to analysis to protect confidentiality.

## Results

### Participants

Twenty-three participants were recruited between May 21 and June 29, 2020: 12 families (F) and 11 HCPs (H). Another 11 families and 11 HCPs expressed interest but did not attend an interview.

Six families completed individual interviews (four mothers, one father, and one grandfather), and six families participated in a focus group (two with two mothers and one with a mother and father from the same family). Length of NICU stay ranged from 1 to 131 days, with some families still on the unit during their participation ( $n = 5$ ), some whose infant was in the NICU but

who were unable to be in the NICU ( $n = 2$ ), and some who had been discharged ( $n = 5$ ). Nine family participants were white, two were Black, and one preferred not to disclose. Four participants resided within 30 km of the hospital, two resided within 100 km of the hospital, and six lived over 100 km away. Most participants were between the ages of 30 and 40 (58%), had a college degree or higher (83%), and had a household income over \$75,000 (50%).

Eleven HCPs participated in three focus groups, generally three or four per group. HCPs, with a range of 3–17 years of experience, included allied health professionals (e.g., dietitian), nurses, nurse practitioners, pharmacists, and physicians. All identified as white and 82% were women.

### Findings

Based on the analysis, three main themes were identified related to the impact on FICare of COVID-19 restrictive family presence policies in the NICU: (1) successes, (2) challenges faced, and (3) strategies for moving forward.

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### Successes

Successes that were identified by families and HCPs focused on (1) fostering FICare during a pandemic, (2) HCP adaptability and institutional changes, and (3) use of technology to bridge the gap.

*Fostering FICare during a pandemic.* Most of the families with a support person in the NICU felt that FICare continued throughout the restrictions considering their interactions with HCPs, participation during medical rounds, as well as being present with their infant to support their growth and development. Families commented: “I still change his diapers, and I’m... trying to be as



involved as possible” (F-1). Being involved during medical rounds was an important time for families to be heard and their presence was felt and valued. When families were listened to by the NICU team, they felt like they were part of their infant’s care team.

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Families who were present in the NICU with their infants had enhanced and focused relationships with their newborn. Families had more time for skin-to-skin contact and opportunity for one-on-one bonding. Participants also reported the benefit of being able to designate a nontraditional primary caregiver as the infant’s support person to ensure their infant was not alone, if a parent was unable to remain full time in the NICU due to competing responsibilities. One HCP said we’ve “seen a lot of other support people instead of just a mom or dad (during the pandemic), which has been very unique and very interesting . . . it takes a village . . .” (H-6). Family, whether present in the NICU or at home, felt confident in the care that was being provided to their infant in the NICU.

**HCP adaptability and institutional changes.** Another success was that throughout the pandemic, HCPs showed significant adaptability along with institutional changes that led to positive outcomes. HCPs felt that their care “changed to be more a friend/support to the support person” (H-6) to fill the gap that occurred with the restricted presence policies. Most families felt that there was a special connection with the HCPs during the pandemic and that providing care was more than a job to the HCPs. In addition to nursing staff, families mentioned that other HCPs were supportive, such as social workers, nurse practitioners, parent partners, and lactation consultants. Families mentioned that the bedside HCPs “provided lots of support mentally” (F-1).

Families praised some of the institutional changes, such as the provision of free food, stating “the food took off a massive amount of stress” (F-6). HCPs echoed the positive impact of providing food to families: “having meals for our families here has been the most wonderful thing . . . we’re seeing everyone’s mental health is much better, financially it’s huge” (H-6).

**Use of technology.** The third success was the availability and use of technology which was noted as an essential component to a successful stay. Many of the families stated that the use of video calling, while not a replacement for physical presence, was helpful during these restricted times to maintain a connection to their support network and facilitate the development of a relationship between their support network, specifically their partner in most cases, and their newborn. For example, the families said “Facetime helped a lot. Being able to Facetime with (support person) and the baby was really important” (F-6). Some of the HCPs reported actively integrating the family members who could not be present in the NICU, especially with providing education, through video calls and existing eHealth platforms. For example, one said

I’ve done a lot of Facetime with the support parents at home, going over the education and . . . just having the dad Facetime in, and having the phone kind of on top of the incubator, so he can see what we’re doing or just kind of be a part of it. (H-6)

Video calling was also used by several families during medical rounds, if they could not be present or if they wanted to invite a partner virtually. Families who were not present in the NICU reported that “in lieu of actually being there—just being able just to see (my son) . . . relieved a lot of stress” (F-6).

## Challenges

Despite the successes, the restrictions understandably created challenges in facilitating FICare within the NICU and precipitated several unintended consequences. The challenges identified by the participants related to (1) lack of

standardized messaging; (2) failure in fully engaging families, including gaps in FICare and challenges with feeding; (3) impact on parental mental and physical well-being; and (4) unequitable virtual care.

*Lack of standardized messaging.* An issue highlighted by participants was the lack of consistent messaging around the restriction policies and supports available. A HCP said, “I feel like (communication is) where we lacked a little bit . . . no one kind of knew what was going on or what the plan was . . .” (H-5). Families were also concerned about the lack of consistent messaging. Several families discussed that they were referred to the hospital website for updates as the staff were not aware. Many families felt there was miscommunication about the rules; they felt that “if there had been like a clear outline of what exactly the rules were, that would have helped us and probably saved a bunch of grief trying to work through what was the best decision to make” (F-12)

*Failure in fully engaging families.* Another area of concern was the failure to fully engage family, which resulted in gaps in FICare as well as challenges associated with feeding and educating families. Not all the families with a support person in the NICU felt that being integrated in their infant’s care was considered a priority. For example, one family noted that they

had been in the NICU a little bit before someone told us to speak up and be active in the rounds and stuff . . . I just felt like I was more of an observer for the first couple of days until I realized I could be more integrated. (F-12)

Some HCPs recognized that FICare was not prioritized during rounds because of COVID-19-related changes to facilitate virtual participation. It was difficult to engage families due to physical distancing and virtual participation of other HCPs. Additionally, for families who were not able to be present in the NICU, this resulted in a reduction of FICare. The HCPs felt that

it really didn’t feel like family-centered care . . . we regressed a lot during COVID where we were into a more paternalistic care model, where we were making the decisions for the baby and therefore the family and it didn’t feel good. (H-7)

This also resulted in challenges in feeding as participants reported that the restrictions created barriers to mothers’ breastfeeding their infants. While only hypothetical, restrictions would have prevented a COVID-19 positive mother from entering the unit to feed her infant. Families had a very hard time when they were forced to make decisions that meant that they could not breastfeed their infants as they intended or desired due to restrictions that limited their ability to enter the NICU.

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Additionally, there were challenges with providing education and teaching virtually. One HCP exemplified that

normally we like to have the parents do some insertions together so that they can help each other in going home if and when they need to re-insert the NG tube. So that provided some challenges with us as we only had one parent here. So, it was left for the mom (or whoever was with the baby) to then go home and teach the partner or support person this tube feeding education. (H-4)

The HCPs tried to overcome this by providing families with a video of the mother and the nurse doing the insertion to send home to the partner as a resource, but this often was felt as not the same quality as previous FICare offered on the unit.

*Impact on parent mental and physical well-being.* The third challenge identified was the negative impact on parent mental and physical well-being. When

the presence restrictions were established at the beginning of the pandemic, only one support person could be present, and they had to remain in the NICU without leaving. Some families could not stay in the NICU with their infant for various reasons, and they said “COVID broke my heart a little bit” (F-8). HCPs empathized with that situation, saying

the fact that they’ve been separated from their baby, I don’t think that any alternate forms of access could overcome that . . . we know that the physical presence of a parent is so important . . . I can only imagine the long-term consequences, not only on the baby, but on the whole family. (H-7)

Additionally, the second support person was required to leave after the birth, which was also very emotional and hard on the family. One family said “the day (my partner) had to leave, he (found) it very, very hard to leave . . . it wasn’t easy for him” (F-3). This resulted in high stress, both for the families and the staff. One HCP suggested this stress was negatively impacting mothers’ milk supply, saying “I think having the mom lose her support partner . . . was stressful, and I think it affected milk supply” (H-9). Families who had only one person in the NICU spoke about how the physical separation from their partner and broader support network was detrimental to their mental health, increased their stress levels, and made them feel lost. Families with other children mentioned that having to choose between their older children and not being allowed to all be together in the NICU was the greatest impact the pandemic had on them.

Some families also discussed not wanting to leave their infant alone which meant they rarely left their infant’s NICU room because their partner was not there and was therefore unable to stay with the infant while they were gone. For example, one family said

when I was outside for that hour and a half yesterday, I felt like I should be inside with (my son). But if (my partner) was here, I would feel more at peace, knowing that he’s with his father . . . if I had to leave. (F-1)

In instances where the mother was in the NICU with their infant alone, participants discussed how the women, who were recently patient’s themselves, would have benefited from having a support person instead of just being the infant’s support person. A mother said, “it would have been nice to have someone there to support me, not just support my daughter” (F-5). Families spoke about how detrimental being alone during this difficult time was to their mental health. One family member said, “it was pretty traumatizing for me being alone, really” (F-1). Families also stated that the most stressful part of the whole experience was the uncertainty of what would happen or change next. Families commented, “it’s kind of like just every day you would wait like for like what’s the next thing? What’s the next support that’s going to be removed?” (F-6). HCPs also noted how this uncertainty was negatively affecting families, causing a lot of uncertainty and anxiety.

Beyond mental health, family’s physical well-being was also negatively impacted, including barriers to meeting the pharmacological needs of the mothers due to the restrictions. While some families were able to use their support network to fill prescriptions, some families did not have that option. For example, one family was “given a prescription for Domperidone (for milk production) . . . but wasn’t allowed to leave the hospital . . . the lactation consultant went out of her way to fill the prescription because there was no other way” (F-6).

*Virtual care.* The final challenge noted was related to the access to virtual care. Early in the pandemic, virtual rounds were conducted at each families’ door with only a few HCPs present with other HCPs and families joining remotely. Some of the families found that virtual medical rounds were frustrating with the lack of virtual support and broken connections. Most HCPs and families felt that while they made the most out of communicating from a distance, they did not feel connected with the team in the same way.

The HCPs noted several concerns as some of the standard processes were shifted to a virtual platform, including difficulties with virtual rounds when they were initially rolled out. They



found them “disjointed in nature (and) there’s been inconsistency in terms of how we’ve interacted with the team, but I think it’s all progressing in a positive way” (H-8). Other HCPs were concerned about the lack of standard process for virtual rounds, leaving certain HCPs feeling left out and undervalued. Several of the HCPs suggested these difficulties were a safety concern. One HCP stated

there’s some safety concerns when you’re trying to allow people to be present at the bedside to formulate a plan—and sometimes I just don’t know exactly when to interject, and I find like I miss points or have to get clarification afterwards. (H-8)

There were also concerns raised regarding equity in this shift to more virtual care. While some HCPs initiated teaching through virtual methods to incorporate the whole family, this was not always accessible which often left the responsibility of all education on the family member staying in the NICU. One family did not have access to Wi-Fi at home and as a result had “actually never seen a video or a picture of the baby or done any Facetime...that is a big barrier for our families” (H-6). Another challenge was related to lack of translation available, leaving some families unsupported.

### *Finding a Way Forward*

The final theme was finding a way forward, which was possible through supportive leadership who were responsive to family needs which were essential in overcoming obstacles.

Participants offered many suggestions for how to improve and enhance their experience during parental restriction policies due to COVID-19. Despite unintended consequences, NICU leadership and HCPs quickly adapted policies to offer support and help families connect and be with their infant(s). For example, when family presence restrictions were instituted in the NICU, leadership ensured that there were processes in place for safely accepting patient items from outside the

hospital, including expressed milk and scented cloths. The lactation consultants facilitated a unique protocol for families who were not permitted in the NICU due to the COVID-19 policies to be able to deliver expressed breast milk for their infant(s). This protocol was developed during the height of the pandemic to ensure that each family received the necessary support to continue to be engaged with their infant’s care, even if they could not be physical present. Delivering expressed breast milk and scented cloths meant a great deal to the families, some of whom drove a significant distance every other day to provide this to their newborn. Families said that “it meant a lot that I was at least able to do that for her, and that they were willing to take the milk” (F-8).

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Another key component of moving forward was the focus on the need for the hospital to adapt to family needs as they became known. For example, when usual hospital food services were shut down, leadership changed protocols to supply free food for the support person present in NICU. This change greatly reduced the stress level of families and was mentioned as a positive change by every family and HCP. In addition, upon recognition of the gap in support for non-English speakers, leadership ensured that virtual translators could be contacted for all who may need them once physical translators were no longer allowed on the unit.

The HCPs acknowledged the difficulty of balancing safety and FICare, saying “how do you protect your staff and the babies and the family, but also keep the family centered care? There’s a huge (im)balance there and I don’t know how you tip the scales to make it all even” (H-6). Yet even as families divulged how incredibly difficult

coping with the uncertainty of the pandemic was, they also acknowledged the support and compassion of the healthcare leadership, policy makers, and HCPs. However, there are still areas for improvement, such as increasing the number of support people allowed.

## Discussion

The aim of this study was to explore NICU families' and HCPs' experience to understand the impact of the COVID-19 parental presence restrictions on FICare. Concepts emerged under the themes of successes, challenges, and finding a way forward. There was tension with balancing the successes and challenges. While continuing to foster FICare during a pandemic, having HCPs adaptable and offering positive institutional changes, and using technology to bridge the gap were areas of success, some participants acknowledged the flip-side challenges including lack of standardized messaging and a failure in fully engaging families, as well as unequitable access to virtual care. However, participants identified key suggestions to finding a way forward that focused on supportive leadership who were responsive to family needs as essential ways to overcoming obstacles related to COVID-19.

The NICU is a very stressful environment for families even pre-COVID-19 (Carter et al., 2007; Pinelli, 2000). The uncertainty that the pandemic and changing restrictions caused for families only added to that stress (Erdei & Liu, 2020). On top of that additional stress was the disruption to their social support, through the restriction of the second support person. The importance of the second support person in the NICU was made evident through this needs assessment. Despite recommendations for additional support measures (e.g., family, social workers, religious counselors, parent support groups, psychologists; Hall et al., 2015; McHaffie, 1992; Nottage, 2005), most NICU families actually lost much of their social support, including their partner, extended family, and parent support groups. However, NICU leadership did pivot quickly to ensure that families had ready access to parent partners, social workers, and psychologists virtually. Emerging evidence argues that there is a need to consider the negative

implications that restricted family presence policies during COVID-19 have not only on families but also the extremely vulnerable preterm infants (Bouchoucha & Bloomer, 2020; Pang et al., 2021).

Some of the successes and positive outcomes of the family restriction policies were the continued focus on FICare as well as the shift to virtual care to engage those who were not able to be present. This aligns with the recommendations that wherever possible, steps be taken to protect the well-being of new mothers in these uncertain times (Mayopoulos et al., 2020). Pivoting to virtual care is an important opportunity, which has shown positive impact in other NICUs as a way to still provide quality care. For example, cameras in the NICU have been shown to reduce stress levels in parents related to separation from their infant(s; Guttman et al., 2020). Providing education in a high stress situation is challenging and providing consistent messaging and materials has been shown to be key (Gehl et al., 2020). Therefore, the use of eHealth platforms, such as the existing eHealth educational platform called Chez NICU Home which was developed prior to the pandemic, was invaluable as it allowed family members who could not be present in to NICU to remain engaged in their infant's care and receive all the education. These existing technologies, such as virtual rounding, NICU web camera systems, and Chez NICU Home, may be used to promote FICare during a time of crisis when family members cannot be present in the NICU but could also be considered post pandemic to augment care when families are unable to be present in the NICU (Gaulton et al., 2020). In our NICU, each infant has their own single-family room with embedded technology, including a computer and access to free Wi-Fi, which was able to facilitate the virtual connection needed during this challenging time. Technology should always be considered an adjunct to connecting families but not as a replacement to having families present in the NICU. However, it is important to consider ways to provide more equitable access to these virtual supports, such as providing smart devices if families do not have access or providing a phone option if families do not have access to reliable Wi-Fi.

Despite these successes, families have made it clear that the NICU restrictions had a negative

impact on their experience and mental and physical well-being. Given the lack of documented vertical transmission and low number of COVID-19 positive infants (Munshi et al., 2020), more research is required to understand the implications of the restrictions and find a balance between safety and FICare. While visitation restrictions are intended to minimize the spread of COVID-19, it is essential to address the needs of families such as the provision of equitable care, clear leadership, and responding to family needs (Wong et al., 2021). Given the potential adverse outcomes for infants who cannot have a family member present, it is essential to identify ways to promote attachment and engagement in care to minimize these risks (Munshi et al., 2020; Murray & Swanson, 2020; Tscherning et al., 2020). However, early in the pandemic, families noted that the restriction of other family members being present on the unit was a hinderance to their mental health. Our findings align with other articles to suggest that increased mental health support is required for families in the NICU, both during this pandemic and moving forward (Hynan, 2020). This stress mitigation is key to optimal child development and overall family well-being (Erdei & Liu, 2020).

Moving forward, it will be important to focus on providing supportive leadership and being responsive to family needs. For instance, families will go to incredible lengths in order to provide for their children and be connected with them, with some families driving several hours to deliver expressed breast milk and scented cloths for their infants. Other families were able to connect by video or telephone and joined rounds remotely to ensure they were included in their infant's care. These facilitators were able to help when they were the families' only means of connecting with their infant when they were not able to be present in the NICU. The single-family room NICU design allows families to stay with their infant and promotes greater privacy when using technology, such as video calling. As found in Patterson et al. (2019), family who had to stay overnight appreciated their comfort and privacy, access to a resting/sleep place, control over their environment (e.g., lights, access to electricity), and secure, in-room storage, all of which are available at the IWK Health in the single-family NICU rooms

(Patterson et al., 2019). Single-family rooms can provide some additional comfort to parents by providing their own space for themselves and their infant to facilitate their healing (Patterson et al., 2019), which reflects the patient-centered care that is at the core of the IWK Health NICU. The pandemic highlighted that single-family rooms have reduced risk of infection and increased overall family experience. For example, if isolation is required, in single-family rooms families can remain with their infant, which would not be possible in an open bay NICU. Furthermore, single-family rooms with bathroom and shower facilities enhance family's ability to cohabit with their infant without an increasing risk of having to be around other people. Single-family rooms also offer larger spaces to allow for physical distancing from HCPs. Thus, in the development of policies, consideration of family impact is an important component and should not be disregarded or minimized and ways to actively engage family members who cannot be present should be a focus (Hart et al., 2020). Equity in healthcare is essential for optimal health and well-being at the population level.

### *Limitations and Future Research*

While these findings provide insight into the experience of FICare during COVID-19, there are some limitations that need to be acknowledged. While we were able to recruit a diverse group of families and HCPs and we achieved data saturation, a greater number and diversity of participants may have provided further insight/understanding of their needs. Due to the significant variation in COVID-19 prevalence not only within Canada but around the world, the extent of transferability should be considered (Korstjens & Moser, 2018). Nevertheless, in this context, the prevalence of COVID-19 was relatively low, suggesting that if the FICare experience was significantly impacted in this context, it would likely be similarly or worse in other contexts where the prevalence of COVID-19 was higher.

Another limitation was that we did not member check our findings with the participants, however, we did triangulate the findings through the inclusion of both families and HCPs and had members

of the team who had prolonged engagement with the context, including working on the unit during COVID-19, validate the identified themes. Additionally, our findings build on the existing literature, leading to greater confirmability of the findings (Korstjens & Moser, 2018).

While we had initially planned to only run focus group discussions, many families preferred individual interview as they reported not feeling comfortable with a virtual group environment. Nevertheless, the interviews resulted in very rich family data, and this identification of family preference has implications for future qualitative research design conducted with families using virtual data collection methods. Further research to examine the experience and comfort of families' virtual participation in research is warranted.

## Conclusions

The severe family restrictions implemented in the NICU in response to COVID-19 had a significant impact on parental mental health as well as significantly impacted the provision of FICare. HCPs reported added stress and a perceived need for the expansion of their role to that of a family support person. Despite this setback, NICU leadership quickly adapted to offer some support to families such as provision of food and virtual online resources and communication. Further research is warranted to determine the uptake and impact of the use of virtual technology in the NICU to augment care. Further research is also warranted to elucidate the experiences of families in the NICU during COVID-19 restrictions and potential long-term impacts on infants and their families.

## Implications for Practice

- Asymptomatic parents should not be restricted from seeing or touching their infant, a minimum of at least two parents or support persons able to enter the NICU together.
- Parent should be included in infant care activities and included in medical rounds, preferably in person also but with opportunity to join virtually.
- Measures to support families during COVID-19 such as access to medical grade face masks, vaccines, provision of breastmilk and breastfeeding support, sleep facilities, food, medicine, parking, and transportation should be provided.
- Efforts to ensure equitable access to secure virtual technology communication tools and resources should be prioritized, not to replace parent in person presence but to provide additional opportunity for connection to extended family members.


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## Supplemental Material

The supplemental material for this article is available online.

## References

- Baley, J. Committee on Fetus and Newborn. (2015). Skin-to-skin care for term and preterm infants in the Neonatal ICU. *Pediatrics*, *136*(3), 596–599. <https://doi.org/10.1542/peds.2015-2335>
- Bembich, S., Tripani, A., Mastromarino, S., Risio, G. D., Castelpietra, E., & Risso, F. M. (2021). Parents experiencing NICU visit restrictions due to COVID-19 pandemic. *Acta Paediatrica*, *110*(3), 940–941. <https://doi.org/10.1111/apa.15620>
- Bouchoucha, S. L., & Bloomer, M. J. (2020). Family-centered care during a pandemic: The hidden impact of restricting family visits. *Nursing & Health Sciences*. <https://doi.org/10.1111/nhs.12748>

- Bryanton, J., Beck, C. T., & Montelpare, W. (2013). Postnatal parental education for optimizing infant general health and parent-infant relationships. *The Cochrane Database of Systematic Reviews*, *11*, CD004068. <https://doi.org/10.1002/14651858.CD004068.pub4>
- Carter, J. D., Mulder, R. T., & Darlow, B. A. (2007). Parental stress in the NICU: The influence of personality, psychological, pregnancy and family factors. *Personality and Mental Health*, *1*(1), 40–50. <https://doi.org/10.1002/pmh.4>
- Cheng, C., Franck, L. S., Ye, X. Y., Hutchinson, S. A., Lee, S. K., & O'Brien, K. (2019). Evaluating the effect of family integrated care on maternal stress and anxiety in neonatal intensive care units. *Journal of Reproductive and Infant Psychology*, 1–14. <https://doi.org/10.1080/02646838.2019.1659940>
- Darcy Mahoney, A., White, R. D., Velasquez, A., Barrett, T. S., Clark, R. H., & Ahmad, K. A. (2020). Impact of restrictions on parental presence in neonatal intensive care units related to coronavirus disease 2019. *Journal of Perinatology*, *40*(1), 36–46. <https://doi.org/10.1038/s41372-020-0753-7>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Erdei, C., & Liu, C. H. (2020). The downstream effects of COVID-19: A call for supporting family well-being in the NICU. *Journal of Perinatology*, *40*(9), 1283–1285. <https://doi.org/10.1038/s41372-020-0745-7>
- Franck, L. S., & O'Brien, K. (2019). The evolution of family-centered care: From supporting parent-delivered interventions to a model of family integrated care. *Birth Defects Research*, *111*(15), 1044–1059. <https://doi.org/10.1002/bdr2.1521>
- Franck, L. S., Waddington, C., & O'Brien, K. (2020). Family integrated care for preterm infants. *Critical Care Nursing Clinics of North America*, *32*(2), 149–165. <https://doi.org/10.1016/j.cnc.2020.01.001>
- Gaulton, J., Ziegler, K., & Chang, E. (2020). Virtual practices transform the care delivery model in an intensive care unit during the coronavirus pandemic. *NEJM Catalyst Innovations in Care Delivery*. <https://doi.org/10.1056/CAT.20.0169>
- Gehl, M. B., Alter, C. C., Rider, N., Gunther, L. G., & Russell, R. B. (2020). Improving the efficiency and effectiveness of parent education in the neonatal intensive care unit. *Advances in Neonatal Care*, *20*(1), 59–67. <https://doi.org/10.1097/ANC.0000000000000644>
- Guttmann, K., Patterson, C., Haines, T., Hoffman, C., Masten, M., Lorch, S., & Chuo, J. (2020). Parent stress in relation to use of bedside telehealth, an initiative to improve family-centeredness of care in the neonatal intensive care unit. *Journal of Patient Experience*, *7*(6), 1378–1383. <https://doi.org/10.1177/2374373520950927>
- Hall, S. L., Ryan, D. J., Beatty, J., & Grubbs, L. (2015). Recommendations for peer-to-peer support for NICU parents. *Journal of Perinatology: Official Journal of the California Perinatal Association*, *35* Suppl 1, S9–13. <https://doi.org/10.1038/jp.2015.143>
- Hart, J. L., Turnbull, A. E., Oppenheim, I. M., & Courtright, K. R. (2020). Family-centered care during the COVID-19 Era. *Journal of Pain and Symptom Management*, *60*(2), e93–e97. <https://doi.org/10.1016/j.jpainsymman.2020.04.017>
- Hynan, M. T. (2020). Covid-19 and the need for perinatal mental health professionals: Now more than ever before. *Journal of Perinatology: Official Journal of the California Perinatal Association*, *40*(7), 985–986. <https://doi.org/10.1038/s41372-020-0696-z>
- Jiang, S., Warre, R., Qiu, X., O'Brien, K., & Lee, S. K. (2014). Parents as practitioners in preterm care. *Early Human Development*, *90*(11), 781–785. <https://doi.org/10.1016/j.earlhumdev.2014.08.019>
- Kim, T. H. M., Delahunty-Pike, A., & Campbell-Yeo, M. (2020). Effect of fathers' presence and involvement in newborn care in the NICU on mothers' symptoms of postpartum depression. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *49*(5), 452–463. <https://doi.org/10.1016/j.jogn.2020.05.007>
- Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*, *24*(1), 120–124. <https://doi.org/10.1080/13814788.2017.1375092>
- Lebel, C., MacKinnon, A., Bagshawe, M., Tomfohr-Madsen, L., & Giesbrecht, G. (2020). Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic. *Journal of Affective Disorders*, *277*, 5–13. <https://doi.org/10.1016/j.jad.2020.07.126>



- Mayopoulos, G., Ein-Dor, T., Li, K. G., Chan, S. J., & Dekel, S. (2020). Giving birth under hospital visitor restrictions: Heightened acute stress in childbirth in COVID-19 positive women. *MedRxiv: The Preprint Server for Health Sciences*. <https://doi.org/10.1101/2020.11.30.20241026>
- McHaffie, H. E. (1992). Social support in the neonatal intensive care unit. *Journal of Advanced Nursing*, 17(3), 279–287. <https://doi.org/10.1111/j.1365-2648.1992.tb01905.x>
- Monaghan, J., Kim, T., Dol, J., Orovec, A., & Campbell-Yeo, M. (2020). Parents' learning needs and preferences in a neonatal intensive care unit: A desire for enhanced communication and eHealth technology. *Journal of Neonatal Nursing*, 26(2), 101–105. <https://doi.org/10.1016/j.jnn.2019.09.001>
- Munshi, L., Evans, G., & Razak, F. (2020). The case for relaxing no-visitor policies in hospitals during the ongoing COVID-19 pandemic. *CMAJ*. <https://doi.org/10.1503/cmaj.202636>
- Murray, P. D., & Swanson, J. R. (2020). Visitation restrictions: Is it right and how do we support families in the NICU during COVID-19? *Journal of Perinatology*, 40(10), 1576–1581. <https://doi.org/10.1038/s41372-020-00781-1>
- Negron, R., Martin, A., Almog, M., Balbierz, A., & Howell, E. A. (2013). Social support during the postpartum period: Mothers' views on needs, expectations, and mobilization of support. *Maternal and Child Health Journal*, 17(4), 616–623. <https://doi.org/10.1007/s10995-012-1037-4>
- Nottage, S. L. (2005). Parents' use of nonmedical support services in the Neonatal intensive care unit. *Issues in Comprehensive Pediatric Nursing*, 28(4), 257–273. <https://doi.org/10.1080/01460860500396922>
- O'Brien, K., Lui, K., Tarnow-Mordi, W., & Lee, S. K. (2018). Breastfeeding data in the family integrated care trial. *The Lancet. Child & Adolescent Health*, 2(4), e5. [https://doi.org/10.1016/S2352-4642\(18\)30072-5](https://doi.org/10.1016/S2352-4642(18)30072-5)
- O'Brien, K., Robson, K., Bracht, M., Cruz, M., Lui, K., Alvaro, R., da Silva, O., Monterrosa, L., Narvey, M., Ng, E., Soraisham, A., Ye, X. Y., Mirea, L., Tarnow-Mordi, W., & Lee, S. K., & FICare Study Group and FICare Parent Advisory Board. (2018). Effectiveness of family integrated care in neonatal intensive care units on infant and parent outcomes: A multicentre, multinational, cluster-randomised controlled trial. *The Lancet. Child & Adolescent Health*, 2(4), 245–254. [https://doi.org/10.1016/S2352-4642\(18\)30039-7](https://doi.org/10.1016/S2352-4642(18)30039-7)
- Pang, E. M., Sey, R., Beritto, T. D., Lee, H. C., & Powell, C. M. (2021). Advancing health equity by translating lessons learned from NICU family visitations during the COVID-19 pandemic. *Neo-Reviews*, 22(1), e1–e6. <https://doi.org/10.1542/neo.22-1-e1>
- Patterson, E. S., Sanders, E. B.-N., Lavender, S. A., Sommerich, C. M., Park, S., Li, J., & Evans, K. D. (2019). A Grounded theoretical analysis of room elements desired by family members and visitors of hospitalized patients: Implications for medical/surgical hospital patient room design. *Health Environments Research & Design Journal*, 12(1), 124–144. <https://doi.org/10.1177/1937586718792885>
- Pinelli, J. (2000). Effects of family coping and resources on family adjustment and parental stress in the acute phase of the NICU experience. *Neonatal Network*, 19(6), 27–37. <https://doi.org/10.1891/0730-0832.19.6.27>
- Shorey, S., Chan, S. W.-C., Chong, Y. S., & He, H.-G. (2014). Maternal parental self-efficacy in newborn care and social support needs in Singapore: A correlational study. *Journal of Clinical Nursing*, 23(15–16), 2272–2282. <https://doi.org/10.1111/jocn.12507>
- Tandberg, B. S., Flacking, R., Markestad, T., Grundt, H., & Moen, A. (2019). Parent psychological well-being in a single-family room versus an open bay neonatal intensive care unit. *PLoS One*, 14(11), e0224488. <https://doi.org/10.1371/journal.pone.0224488>
- Tscherning, C., Sizun, J., & Kuhn, P. (2020). Promoting attachment between parents and neonates despite the COVID-19 pandemic. *Acta Paediatrica*, 109(10), 1937–1943. <https://doi.org/10.1111/apa.15455>
- van Veenendaal, N. R., Deierl, A., Bacchini, F., O'Brien, K., & Franck, L. S. (2021). Supporting parents as essential care partners in neonatal units during the SARS-CoV-2 pandemic. *Acta Paediatrica*. <https://doi.org/10.1111/apa.15857>
- Wong, A., Bhyat, R., Srivastava, S., Lomax, L. B., & Appireddy, R. (2021). Patient care during the COVID-19 pandemic: Use of virtual care. *Journal of Medical Internet Research*, 23(1), e20621. <https://doi.org/10.2196/20621>