Parents’ and caregivers’ perceptions of the use of live video recording in neonatal units: A focus group study.

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Background: To study the perceptions of parents and caregivers on the use of live video in neonatal clinical practice in order to better assess its suitability, limits and constraints.

Methods: Nine focus group interviews were conducted in four neonatal units involving 20 caregivers and 19 parents. Data were triangulated using transcripts and field notes and analyzed using inductive and semantic thematic analysis.

Results: The seven major themes that emerged from the caregiver focus groups were (i) the impact of video recording on caregiver’s behavior; (ii) the impact on parents; (iii) forensic issues; (iv) guarantee of use; (v) benefits for the new-born; (vi) methodology of use; and (vii) technical considerations & feasibility. The five major themes emerge from parents focus groups were (i) benefits for the new-born and care enhancement; (ii) impact on parents and potential benefits in case of newborn child/parent separation; (iii) informed consent and guarantee of use; (iv) concern about a possible disruptive impact on caregivers; and (v) data protection.

Conclusion: Both parents and caregivers found the use of video in care useful and acceptable if measures were taken to protect the data and mitigate any negative impacts on caregivers.

Keywords
Caregivers, Focus groups, Parents, Perceptions, Video.

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Background

Technology is increasing present in hospitals(1,2), particularly in health care services thanks to the computerisation of medical records and prescriptions(3), the use of telemedicine(4) and the use of local networks to share medical
data. Video recording has also shown its potential in the field of medical training through simulation(5) and e-learning(6) and has started to emerge in healthcare services. While the use of video is currently not common practice in neonatology. Its use has increased in neonatal units to meet new needs. Various teams(7–11) have been using webcam video for several years either to limit the impact of parent-child separation or when parental presence is limited, to promote early emotional bonding and reduce separation anxiety.

Few data are available on how parents and caregivers perceive this technology. Yeo et al.(8) showed through surveys that this technology is easily accepted and enthusiastically adopted by parents. Cameras placed in the new-born's bed were activated during "out-of-care" times, and images were accessible in real-time by parents. Hawkes et al.(9) surveyed parents and caregivers before implementing a webcam monitoring system. Most parents were in favour of this implementation, in contrast to caregivers who were mostly unfavourable. Caregivers were concerned by their lack of familiarity with such a system, the risk of privacy restrictions, and the potential stress created due to the presence of the webcam. Kerr et al.(10) found that parents and caregivers consider parents' direct access to a recording of their new-born child as an important improvement in neonatology.

Cameras are currently being used in our units as part of the Horizon 2020 Digi-NewB project(12), the aim of which is to improve care for new-borns through the development of a next generation video and sound monitoring system.

In this project the camera is in the newborn's incubator.

The implementation of this research project has raised ethical questions about the widespread use of video in the daily care of new-borns. Therefore, a study was carried out which explored the issues associated with the use of video recording in clinical practice in neonatology, the results of which are presented in this paper. Here, the use of video is discussed in a broadly speaking, without specifying where it is placed in relation to the baby and the room.

The main objective of this work was to study how parents and caregivers perceive the use of video and sound recording in neonatology units, in order to improve our knowledge of its potential impact in terms of, human perception, benefits, limitations and constraints.

Methods

Design

A multicentre qualitative focus group study was performed to collect feedback on the use of video and audio recording in neonatal clinical practice, following COREQ guidelines(13). This approach was chosen to generate data on the collective views as well as the personal opinions and experiences of each participant.
Focus groups with caregivers were conducted in one centre in Ireland (Galway) and two centres in France (Angers and Rennes), while focus groups with parents of new-borns were conducted in three centres (Angers, Nantes and Rennes) in France. This study took place between March 2018 and May 2018.

The caregiver focus groups consisted of, doctors, nurses, health managers and psychologists working in different neonatal units. The parent focus group consisted of parents whose child was hospitalised in the neonatal unit at the time of the interviews. We chose two distinct focus group categories (caregivers and parents) to facilitate open discussions and obtain different perspectives. The intra-focus group sampling was heterogeneous for a large intra-category profile.

**Ethical considerations**

The study was approved by the Rennes University Hospital Ethics Committee (reference number 18.21) and all participants gave their informed consent in writing before participating. A physician was responsible for explaining the research project to potential participants. The same physician also had to submit an email newsletter on the purpose and conduct of the research. Any individual who expressed an interest in participating in the focus groups and who met the inclusion criteria were included. Participation was on a voluntary basis and participants were informed that they could withdraw their consent to participate or their feedback at any time. All participants gave their written informed consent before participating. All interviews took place within the hospital in a private room and in accordance with the principle of confidentiality.

**Focus group process**

Each focus group session was facilitated by a moderator experienced in conducting focus groups and familiar with the subject of the study. The session was semi-structured in nature, with a pre-defined list of open-ended questions being asked to the participants during each session (Table 1). The sessions were audio recorded upon receiving the consent of each participant. The audio recordings were then transcribed verbatim and anonymised.

Throughout the sessions, the moderator summarised and reformulated the results and presented them back to the participants to ensure the information was accurate and that their points had been understood correctly. This step was required to ensure the accuracy of the subsequent analyses. At the end of the session, participants completed a short quantitative questionnaire in order to capture their socio-demographic characteristics. The main moderator in Galway was an English-speaking researcher from NUI Galway, while in France the main moderator was a French researcher. The moderator from France also co-moderated the session in Galway. Observers were on hand to take notes at each session.
Internal validation of the data was carried out by the moderators, the interview observer (who also transcribed the audio recordings verbatim), as well as by a neonatologist who also coded the interviews; and thus, facilitating the appropriation phase of the analysis by the researchers.

**Data collection and analysis**

Data collection continued until saturation was achieved, i.e. no new themes were occurring in either staff (14).

Data analysis was performed using QSR International's NVivo® 12 Plus software, which allows the different coding methods described by Saldaña(15). The nodes were extracted from the verbatim of the participants and the coding unit was a full sentence, mostly because interviews were conducted both in French and English preventing a word by word translation.

A post-coding procedure was carried out, nodes were built at the same time as the data analysis, and not taken from the literature. The transcripts were thematically analysed and coded using an inductive approach. The codings were then grouped into thematic concepts. A list of themes and sub-themes was then generated and extracted in tabular form. Constant comparative analysis was used to assess overall saturation. Some verbatim quotes have been collectively selected and presented by the authors to illustrate the thematic results. For the French verbatims, a double translation was carried out to ensure its correct meaning.

**Results**

**Participants characteristics**

*Parents*

A total of nineteen parents participated in the study. Five focus groups were conducted, with each focus group consisting of 4 participants, except in one case where one parent became unexpectedly unavailable. The sessions lasted 32 to 40 minutes. The profile and the characteristics of the participating parents are presented in Table 2. None of the parents had prior experience with hospitalisation in neonatology.

*Caregivers*

Twenty caregivers participated in the study. Four focus groups were conducted with each focus group consisting of 4 to 6 participants. The duration of the interviews ranged from 36 to 62 minutes. The characteristics of the caregivers are summarised in Table 3.

**Thematic analysis**
We obtained a saturation of the data, i.e. all the themes were found in each group, and we did not find a new theme after several analyses of the data.

The themes extracted from the data, classified in order of frequency, are presented in Table 4. Five main themes arose from the analysis of the data from the parents’ focus groups. And seven main themes were identified in the caregivers’ groups. Four themes were found to be common between both groups.

**Four Themes common to both groups**

- **Best interests of the child and improved care**

Naturally, the child's best interest was of prime importance to parents. The introduction of video was seen as a potential means to improving the child’s care through improved understanding of the child’s behaviour and a better assessment of the child's capacities for individualized care. The use of Video could contribute to and improve already available monitoring tools such as the patient monitoring scope, or the NidCap. According to the parents, if the camera offers an advantage for the caregiver and hence improves the care of the child, then it is an acceptable introduction. "It should really always be used in an effort to improve care [...]", "It should always be in the patient's interest, I think."

While the interest of the child is not the first issue raised by caregivers, it was nevertheless a core issue, with some ethical questions about what is best for the child. The benefits of the technology in terms of optimising the care of new-borns, either from a diagnostic point of view or thanks to the individualization of care through a better understanding of the new-born’s behaviour, was a core discussion. "We have children who leave quickly[...] if we have the means to spot this upstream, yes, clearly there is a real benefit, it's worth it..."

- **Impact of images on parents**

Parents responded mostly positively to the use of video as a webcam to view images of their child. The reasons provided were; the ease of parent-child bond in situations of forced separation (reduced mobility due to a C-section, mother-child hospitalization in two different centres), the feeling of being close to their baby, parental re-insurance by monitoring the well-being of their child at all times and finally a better grasp of a highly technical environment around the new-born. "I see with my wife; I took several video clips [...] she watched them a lot of times so it's true that it can create a bond." Negative points were also mentioned in both groups. For example, there could be situations where access to live video would not be available. In these situations, parents could worry that a serious event had occurred creating a source of additional stress. "It also seems a little anxious to me, actually, we're not
Parents indicated that it would probably be necessary for the images to be explained by the caregivers, referred to as “experts”. The contextualization of images by caregivers was a guarantee requested by parents. One example cited by the parents was if their child was in distress, requiring an intubation or similar procedure, the “shocking” images without appropriate explanations could lead to stress.

Parents also raised the concern that continuous access to remote video was could lead hypervigilance, increasing the need for continuous connection, leading to a fatiguing effect. Some parents were worried that they would no longer be able to benefit from "real" rest time outside the room, which would have a significant physical and psychological impact. "There could be a drift[...], to be watching all the time and then when you're at home, you should also cut, recharge...".

The issue of privacy was also widely raised. The camera and audio recordings were seen as potentially intrusive. Particular concern was drawn to the effect of the potential intrusion on intimate moments between parents and child, such as skin-to-skin moments or when breast-feeding. The feeling was that the camera is a ‘third-eye’. In addition, parents were worried about the confidentiality of their own conversations around the system.

- **Concern for the possible impact on caregivers**

The potential impact of the system on caregivers was a concern for parents. They feared the caregivers could feel increased anxiety while carrying out care under video surveillance, thereby increasing the risk of medical error. "I put myself in their shoes, maybe I'd feel a little pressure, a little eye above my head to see if I'm doing my job well.”

The presence of the video was also seen as potentially harming the parent-caregiver relationship by reducing the amount of time caregivers spend in the room. Both groups are concerned about this.

Access to live video would optimize how caregivers target interventions with respect to sleep phases, thereby reducing unnecessary noise and light exposure to the child. But this lesser presence could be detrimental to the time spent interacting with parents, caregivers will often combine a visit to the baby with a chance to discuss care with parents. "If baby is sleeping, we don't go there... but this can be an opportunity to have a discussion with the mother.” This time of exchange was considered by the parents as privileged time with an expert that reassured them, but also allowed for the maintenance of social bonds which are often fragile during the period of hospitalization.
According to the parents, the risk for caregivers under constant web-cam style surveillance was the risk to fall into a *big brother*, with the consequence type relationship of losing the required trust in the care shared between parents and professionals.

This theme was the primary concern of caregivers, with the main argument being that a possible change in behaviour of the caregivers could occur with the presence of the camera by the fear of "doing something wrong" or "being judged", even if this issue was mitigated by the fact that the caregivers were already used to caring for new-born in front of parents. The other obstacle raised was the risk of self-censorship when interacting with the new-born because of the unpleasant feeling of being 'heard', with the potential loss of more natural humanistic interactions such as singing a lullaby or adopting a more familiar attitude towards the child. However, positive arguments were also identified, such as a more rigorous approach to hygiene and the potential for individualized and behavioural care to be provided to new-borns. The impact on the caregiver's time in the child's room was another topic of discussion: However, all caregivers agreed that there is likely an "adaptation" phase to video recording, which seemed to be confirmed by caregivers who are already using video in their clinical practice: "Then we finally forget that the video is there".

- Informed consent and guarantee of use

Both caregivers and parents mentioned that information and consent to video recording were essential prerequisites. They emphasized the need to obtain consent from both parents and exposed caregivers. "In fact, it is rather up to them (the caregivers) to give their agreement or not" said one of the parents.

Both parties shared the same concerns about the requirement to provide the purpose of the recording and the guarantee of use. Two questions that needs to be answered are, who will have access to the videos and why? “there is a need to know where the limits are”

The child's consent was an issue raised only by the caregivers. In this situation, who is the guardian of the child's interest?

*One theme exclusively mentioned by parents*

- Data protection and privacy

Data protection was the last point raised by parents with the fear of data being compromised when WIFI and external network are use. This is an issue that is widely discussed but not well thought through from a technical and feasibility point of view. "You shouldn't be able to access it anywhere, anyhow either."
Three themes only mentioned by caregivers

- Forensic dimension

The forensic aspect was widely raised by the various professions within the group of participating caregivers (psychologist, doctors, nurses). By analysing the themes per profession, the legal dimension is the first theme mentioned by doctors, fearing a possible legal course of action by parents. "[...] during a trial for a death, can there not at some point be a lifting of secrecy? A lawyer may be able to negotiate successfully to access the images". This was also widely addressed by the other professionals interviewed, but in the instance of doctors, there was a particular fear of retaliation from the institutional hierarchy. According to the caregivers, video could facilitate this course of action because of the "evidence" images can provide. There is a concern that a third party (typically lawyers) would erroneously analyse images when taken outside of their context in the event of adverse medical events. "That's what scares (me) about video recording, its possible (erroneous) interpretation." Another fear was the forensic impact due to the unavailability of images during technical problems as this could be interpreted as a desire on the part of the caregiver or other actors to "hide" some events.

- Ways of use: practice improvement, teaching, research

The heterogeneous intra-focus group sampling revealed very specific uses according to the profession. Nurses mentioned how complementarity videos are with the tools and practices already available. One example is the combination of video with NidCap observations in order to refine evaluations concerning oral quality or respiratory maturity. Doctors also spoke of the video as a complementary diagnostic tool to cardiorespiratory monitoring or as a diagnostic tool of the artificial intelligence type. However, in all professional categories, the interest in simulation and e-learning type teaching contributing to the improvement of care practices is key.

- Technical aspect and feasibility

One technical concern with the introduction of video in services was equipment maintenance and training of the staff in charge of this tool. Professionals mentioned the need for assistance from biomedical engineers and the designation of a referent person for the management of this technology. More practical and performance related questions were also addressed, such as the focus of the camera or the different modes of use.
Discussion

The purpose of this study was to explore the different perceptions of parents and caregivers regarding the use of video and audio in neonatal units. Although the two groups of participants have different point of views, all consider video to be useful and acceptable under certain prerequisites, namely the assurance of informed consent, robust data protection and to limit potential negative impacts on caregivers.

Negative outcomes of video

The first concern raised by both groups of participants was the risks of caregivers exposed to video. Parents would be reluctant to use video if it had a negative impact on their child's care, and if it had the potential to negatively modify the behaviour of caregivers. The findings in this study align with the findings from an American study on the impact of the use of webcams in neonatology on nurses' workload. Of specific concerns were the increase in stress, material handling time and time spent on the phone with parents to assist them in interpreting the images. This team provided training for caregivers before this technology could be widely used, particularly on how to use and maintain the equipment.

The question of intimacy, raised by parents, was also an important topic highlighted in the study of L. van Lonkhuijzen et al. where video was used in the birth room. The proposed solution was to focus the camera's frame on the new-born child and study only him, which is also a solution strived for within the Digi-NewB project. Thus, skin-to-skin or breastfeeding moments would not be captured by the camera. They also proposed that audio recording could be interrupted at the parent request.

Another common concern is the impact that images could have on parents in the case of free on-going remote access to live video in acute event situations (resuscitation, technical procedures). This could be prevented with the planned and anticipated shutdown of the cameras during any emergency care procedure or with an automatic display of a message on the screen indicating that a procedure is in progress when the video is turned off.

In addition, the obligation to give consent, to provide the conditions of use, the purpose of the tool and access to the video, was already required in a Dutch study. Data protection is also essential at a time when hacking is frequent. As a result, close collaboration between the IT department and the care staff is essential. The use of a secure portal with a unique secure login and password for each new-born is an option.

Moreover, only the caregivers spoke about the forensic issue. They fear that the images will be used for legal purposes if adverse medical incidents occur. This point is widely discussed in an Australian review where doctors and nurses are concerned that video recording could provide evidence in case of medical or paramedical errors. The main source of disputes is to ensure that nothing is hidden, and video therefore reduces this risk as the
information becomes then available. Video recordings could be used to provide evidence of good practice than to track possible errors(16). O’Donnel et al.(19) suggested to make the acquired images anonymous. They propose to depersonalize the registration as much as possible during storage (no name, no date, no place), to focus the camera solely on the baby and the caregivers’ forearms and introduce a specific legislative framework.

*Positive outcomes of video*

The positive perception of video by both parents and caregivers is in agreement with other studies(8,10).

Several elements justify why the potential introduction of such a system was well received. Better care for the child through a more refined interpretation of his or her behaviour seems to be an important element. Indeed, it could allow early detection of particular events as well as individualisation of care in sync with the new-born’s abilities. Other positive points include the use of webcam mode, which would promote early parent-child bonding(8,20) and allow parents to better understand their baby’s behaviours. Webcam use is seen as a good palliative tool in situations of forced separation(10,21). Kerr et al.(10) evaluated how parents responded to webcam use. They described an increased sense of proximity and responsiveness to their child, emotional well-being, improved physical recovery and the opportunity to introduce the child to family and friends.

In our study, as in the literature, parents also consider video to better understand the technical environment around their baby. This has a positive effect on stress induced by all the equipment needed for care and supervision (22). Thus, webcam use seems to be an acceptable use when there is a process of early separation between parents and child that could have a long-term impact on the relationship(23).

Another significant advantage raised by both groups is the reduction of unnecessary caregiver interventions in the child’s room. These interventions are typically sources of environmental pollution(noise, light) with a proven impact on the neurodevelopment of premature infants (24). This is seen as an improvement in the care of the new-born, like the developmental care. Finally, video is described as a complementary monitoring tool such as the patient monitor scope, NidCap observations or EEG-video.

*Strengths and limitations*

Focus group data collection allowed the comparison of a large number of opinions. This comparison was made possible by conducting separate focus groups for parents and caregivers exposing them to the same questions.

Studies on the subject are rare, making the focus and approach of this study original. Especially the parents’ perceptions which is not or rarely studied. It is hoped that this study will contribute to the small but growing body of
literature which already exists on the subject and inform future implementation of camera and audio systems in critical care units.

However, the results of this study must be taken with the following considerations. There is a bias with the selection of interviewees since recruitment was carried out on a voluntary basis. Selection bias is also related to the characteristics of the participants. In fact, all the parents participating in the study still had their children hospitalized in the department at the time of the interviews, therefore it could be argued that their opinions were compromised by the emotional impact of the current situation they were in. Moreover, they all had the characteristic of being users of social networks, thereby probably more familiar with the ubiquitous use of cameras. Finally, most of the parents belonged to a high socio-professional category. These characteristics may have spontaneously made them more favourable to video. Unlike parents, caregivers seemed less familiar with social networks. There was no mixing between the centres, so the caregivers were colleagues, which may have limited their freedom of speech. These factors may limit the transferability of our results.

**Perspectives**

From the current study, parents and caregivers seem to accept video in care in a generally positive way, but under certain conditions. Using the above-mentioned literature, we have proposed some possible way to improve information and acceptability (See Table 4.)

**Acknowledgments**

We thank all the parents, nurses, psychologist and doctors at the University Hospitals of Nantes, Angers, Galway and Rennes, who participated in the focus groups. We would also like to acknowledge that this publication was funded as part of the Digi-NewB project, by the EU H2020 Research and innovation programme (GA n°689260).

**Abbreviation**

NIDCAP, Neonatal Individualized Developmental Care and Assessment Program.

COREQ, Consolidated criteria for Reporting Qualitative research.

**Authors’ contributions**

ALB participated in the study design, in caregivers’ focus groups, collection and analysis of the data and the writing of the report. NM participated in the study design and analysis of the data through N Vivo software. PS participated in parents’ focus groups, study design, analysis and interpretation of the data. PP participated in study design, all focus groups, data collection, writing and the interpretation of the data. ML, GC, CF, OG and HR participated in organisation of the focus groups and collection of the data. All authors revised this article critically, approved the final manuscript and agreed to its being submitted for publication. ALB, NM, PP and PS had complete access to the study data that support the publication.

**Funding**

No funding was received.

**Availability of data and materials**

The data supporting the findings are contained within the manuscript. The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

**Ethics approval and consent to participate**
Ethics approval was waived by the Medical Ethics Committee of the Rennes University Medical Centers, France under French Law. Written informed consent to participate was obtained for the 9 focus groups. Participation was voluntary and the participants had the right to withdraw at any time without prejudice.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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References
1. Keasberry J, Scott IA, Sullivan C, Staib A, Ashby R. Going digital: a narrative overview of the clinical and organisational impacts of eHealth technologies in hospital practice. *Aust Health Review*. 2018 Jan 8;41(6):646–64.
2. Kruse CS, Beane A. Health Information Technology Continues to Show Positive Effect on Medical Outcomes: Systematic Review. *J Med Internet Res* [Internet]. 2018 Feb 5 [cited 2019 Aug 14];20(2).
3. Kagan I, Fish M, Farkash-Fink N, Bar moy S. Computerization and its contribution to care quality improvement: The nurses’ perspective. *International Journal of Medical Informatics*. 2014 Dec 1;83(12):881–8.
4. Marcin JP, Ellis J, Mawis R, Nagrampa T, Dimand RJ. Using Telemedicine to Provide Pediatric Subspecialty Care to Children With Special Health Care Needs in an Underserved Rural Community. *Pediatrics*. 2004 Jan 1;113(1):1–6.
5. Lopreiato JO, Sawyer T. Simulation-Based Medical Education in Pediatrics. *Academic Pediatrics*. 2015 Mar 1;15(2):134–42.
6. Lewis KO, Cidon MJ, Seto TL, Chen H, Mahan JD. Leveraging e-Learning in Medical Education. *Current Problems in Pediatric and Adolescent Health Care*. 2014 Jul 1;44(6):150–63.
7. Rhoads SJ, Green AL, Lewis SD, Rakes L. Challenges of Implementation of a Web-Camera System in the Neonatal Intensive Care Unit. *Neonatal Network*. 2012 Jan 1;31(4):223–8.
8. Yeo C, Ho SK, Khong K, Lau Y. Virtual Visitation in the Neonatal Intensive Care: Experience with the Use of Internet and Telemedicine in a Tertiary Neonatal Unit. *Perm J*. 2011;15(3):32–6.
9. Hawkes GA, Livingstone V, Ryan CA, Dempsey EM. Perceptions of Webcams in the Neonatal Intensive Care Unit: Here’s Looking at you Kid! *Amer J Perinatol*. 2015 Jan;32(2):131–6.
10. Kerr S, King C, Hogg R, McPherson K, Hanley J, Brierton M, et al. Transition to parenthood in the neonatal care unit: a qualitative study and conceptual model designed to illuminate parent and professional views of the impact of webcam technology. *BMC Pediatrics* [Internet]. 2017 Dec [cited 2019 Feb 18];17(1).
11. Joshi A, Chyou P-H, Tirmizi Z, Gross J. Web Camera Use in the Neonatal Intensive Care Unit: Impact on Nursing Workload. *Clin Med Res*. 2016 Mar;14(1):1–6.
12. Digi-NewB - GCS HUGO - CHU - monitoring system [Internet]. [cited 2019 Aug 25]. Available from: http://www.digi-newb.eu/
13. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007 Sep 16;19(6):349–57.
14. Moser A, Korstjens I. Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *Eur J Gen Pract*. 2018 Dec;24(1):9–18.
15. The Coding Manual for Qualitative Researchers [Internet]. SAGE Publications Ltd. 2019 [cited 2019 Aug 25].
16. van Lonkhuijzen L, Groenewout M, Schreuder A, Zeeman GG, Scherpbier A, Aukes LC, et al. Perceptions of women, nurses, midwives and doctors about the use of video during birth to improve quality of care: focus group discussions. BJOG. 2011 Sep;118(10):1262–7.

17. Jalali MS, Kaiser JP. Cybersecurity in Hospitals: A Systematic, Organizational Perspective. J Med Internet Res [Internet]. 2018 May 28 [cited 2019 Mar 12];20(5).

18. Gelbart B, Barfield C, Watkins A. Ethical and legal considerations in video recording neonatal resuscitations. Journal of Medical Ethics. 2009 Feb 1;35(2):120–4.

19. O’Donnell CPF, Kamlin COF, Davis PG, Morley CJ. Ethical and legal aspects of video recording neonatal resuscitation. Archives of Disease in Childhood - Fetal and Neonatal Edition. 2008 Mar 1;93(2):F82–4.

20. Gray JE, Safran C, Davis RB, Pompilio-Weitzner G, Stewart JE, Zaccagnini L, et al. Baby CareLink: Using the Internet and Telemedicine to Improve Care for High-Risk Infants. Pediatrics. 2000 Dec 1;106(6):1318–24.

21. Feldman R, Weller A, Leckman JF, Kuint J, Eidelman AI. The Nature of the Mother’s Tie to Her Infant: Maternal Bonding under Conditions of Proximity, Separation, and Potential Loss. Journal of Child Psychology and Psychiatry. 1999;40(6):929–39.

22. Aagaard H, Hall EOC. Mothers’ Experiences of Having a Preterm Infant in the Neonatal Care Unit: A Meta-Synthesis. Journal of Pediatric Nursing. 2008 Jun 1;23(3):e26–36.

23. Kennell JH, Klaus MH. Bonding: Recent Observations That Alter Perinatal Care. Pediatrics in Review. 1998 Jan 1;19(1):4–12.

24. Santos J, Pearce SE, Stroustrup A. Impact of Hospital-Based Environmental Exposures on Neurodevelopmental Outcomes of Preterm Infants. Curr Opin Pediatr. 2015 Apr;27(2):254–60.
