



Nurturing visual social development in the NICU

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To the Editor:

As hospital systems grapple with containing coronavirus disease (COVID-19) while protecting healthcare providers and patients, developmental considerations of mask usage while caring for infants and young children with prolonged hospitalizations must be considered. We wish to propose developmental interventions to be implemented in NICUs to mitigate the impact of exclusively masked interactions.

It is assumed that infant visual acuity at birth is specifically developed to facilitate facial focus and recognition, contributing to development of “social networks”—a complex set of pathways involving many areas of the developing brain [1]. Although visual input is certainly not the only factor for these networks, denying infants the visual input reinforcing social interactions is not normal and cannot be without risk. We recommend the article *Neonatal Transitions in Social Behavior and Their Implications for Autism* by Shultz et al. as an excellent review of early social development [2].

Infants appear to be at very low risk for overall infection, illness, and transmission of COVID-19 [3]. However, infants with prolonged hospitalizations and perinatal complications are known to be at risk for significant neurodevelopmental delays and pathologies supporting the need to carefully nurture the social development of infants in NICUs [4, 5]. There is an urgency in early social development as many of these social milestones scaffold on each other and are typically obtained by 9 months of age, and even newborn infants exhibit distress at unreciprocated interactions [6]. We propose the following for consideration:

- (1) Placing higher risk infants in private rooms, especially as discharge approaches and/or the infant is post term.

Development should be a consideration in allocation of private rooms. This allows for social distancing and protection of the highest risk population for COVID-19 in NICUs—adults.

- (2) Considering infant visualization of adult faces as “therapeutic”. It is standard for NICUs to have developmental care plans [7]. In light of COVID-19, extra attention should be paid to social development. This should vary by gestational age with more “passive” protocols for the younger and more fragile infants progressing to more interactive and stimulating protocols. For example, after 2 months corrected age, caregiver-infant interactions should include more mirroring with a greater variety of facial expressions and vocalizations utilized [2, 8].
- (3) Utilization of face shields for more developmentally intensive interactions, specifically bottle/breast feeding times by caregivers, primary nursing staff, and therapists. During times of face shield-only utilization, attention should be given to developmental care mentioned above in #2.
- (4) Placement of high-resolution color photographs of caregivers’ faces in the infant’s visual field. Infants are capable of recognizing caregivers’ faces early and, although not a substitute for dynamic interactions, such photographs reinforce “normal” faces to the infant [9–12].
- (5) Routine testing of caregivers for COVID-19 if possible given local testing capabilities. Ideally, as rapid testing becomes more available, this could be a target population.
- (6) Education of caregivers about infant social development and encouraging extended face to face time both during face shield times and upon discharge.

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We do not have data on the exact amounts or frequencies of masked/unmasked interactions necessary to optimize development, but our knowledge of infant development strongly suggests risk. We would, of course, not expect the above accommodations for caregivers with known, active

COVID-19 infections, and implementation may vary depending on current community spread. However, active consideration of a more nurturing long-term developmental approach to infants in this critical time of development needs to be undertaken.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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