

# Neonatal and Early Infant Development

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As North Carolina continues to work toward improved medical access and care for all to reduce mortality and morbidity, it is important to support those who are especially vulnerable, in particular children born prematurely or those exposed to early trauma and other adverse experiences.

The prematurity rate in North Carolina in 2018 was 10.5% [1]. Advances in medical care have saved many lives in neonatal intensive care units (NICUs) and families are grateful as they ask, "How will he or she do?" While providing life-saving care, the neonatal care system also has a responsibility to support long-term outcomes in all developmental domains, including social-emotional health, as this population is at greater risk of lifelong developmental challenges.

Infant brains develop and organize rapidly while in NICUs and are profoundly influenced by the environment and experience [2]. There is a mismatch of "expected" stimulation within the womb and that which is received in the NICU. The best medical care needs to be neuro-protective and address this discrepancy.

Research confirms the importance of keeping mothers and infants together. There are developmental and preventive advantages from mother's milk and the close physical contact of skin-to-skin holding, which also supports parent healing and strengthens parental bonds [3, 4].

All experiences that infants have in NICUs impact their brains. Both the sensory and the emotional/psychological environments are critical. Bright lights, loud noises, pain, and lack of human contact all can interfere with restful sleep and maturing abilities to process the world, which are critical for healing, growing, organization of sleep-wake states, and other developmental tasks of the brain. While most NICUs have programs that address develop-

mental and family needs, few report comprehensive programs [5].

An example of a program that shows long-term benefits is the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) ([www.NIDCAP.org](http://www.NIDCAP.org)) [6]. It is comprehensive, system wide, and family centered with demonstrated short- and long-term developmental benefits [7, 8]. NIDCAP's Nursery Assessment Manual helps NICUs self-assess their environment, care for infants and families, and support staff toward providing highly attuned developmental care [9].

In all programs that grow and evolve, vigilance is required to prevent program erosion as information is gained and there is staff turnover. As with neonatal development, the field of infant mental health continues to evolve. Its foundation is the work of pioneers such as John Bowlby, who noted the suffering experienced by young children separated from their parents during evacuations in England during World War II, and further developed by scientists such as Mary Ainsworth, who refined the concept of early attachment between parent and child as fundamental to ongoing mental health as well as to cognitive and language development [10]. In the last decade there has been a deepening of our understanding of the impact of early trauma and other adverse childhood experiences (often referred to as ACES) on future physical as well as mental health [11]. ACES such as exposure to domestic violence, growing up in a household disrupted by substance abuse, and significant separations from primary caregivers have been shown to predict outcomes such as decreased academic success in childhood and cardiovascular and immune dysfunction in adulthood, while the existence of protective factors clearly mitigates possible negative consequences [12].

Another current trend is the development of evidence-based models of both prevention and therapeutic intervention for infants and very young children, including direct parent support and interventions to strengthen the parent-child relationship. Approaches such as Child-Parent Psychotherapy, Parent-Child Interaction Therapy, Attachment and Biobehavioral Catch-up, Circle of Security [13], Nurse-Family Partnership [14], and Triple P [15], when provided with fidelity by well-trained professionals, have been shown to significantly impact outcomes for children experiencing a wide range of challenges. The field of infant and young child mental health has also embraced the importance of collaboration with other professionals and service systems. Integrating mental health screening and interventions into pediatric care is one powerful tool in the effort to improve long-term outcomes for children. Improving training, compensation, and working conditions for those who provide early care and education is also receiving attention as a critical policy approach to improving social-emotional outcomes for young children alongside other family-centered social policies such as improved parental leave options. **NCMJ**

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#### Acknowledgements

Potential conflicts of interest. The authors are trainers for the NIDCAP. They have no other potential conflicts to report.

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Electronically published January 6, 2020.

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