

# Developmental and Interprofessional Care of the Preterm Infant

## Neonatal Intensive Care Unit Through High-Risk Infant Follow-up



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### KEYWORDS

- Preterm infants • Developmental care • Neonatal intensive care unit environment
- Oral feeding • Neurodevelopment • Developmental monitoring • Early intervention

### KEY POINTS

- Opportunities to improve cognitive, neuropsychological, and behavioral outcomes for preterm infants begin in the neonatal intensive care unit (NICU).
- Developmental care in the NICU includes changes in the delivery of medical and physical care, supportive handling techniques, infant-led oral feeding practices, and adaptations to the environment that limit infant stress and enhance self-regulation.
- The population of very low birth weight preterm infants is at highest risk for difficulties with transition to oral feeding and for persisting oral feeding challenges that continue to require skilled therapeutic assistance after discharge.
- Proactive developmental monitoring and implementation of timely therapeutic and educational early intervention services are essential to continue to support optimal outcomes for preterm infants.

### DEVELOPMENTAL CARE OF THE PRETERM INFANT: NEONATAL INTENSIVE CARE UNIT THROUGH HIGH-RISK INFANT FOLLOW-UP

According to the National Vital Statistics Report published by the US Centers for Disease Control and Prevention (CDC) in January 2017,<sup>1</sup> the preterm birth rate in the United States in 2015, covering all infants born less than 37 weeks, was 9.63%, a

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slight increase from 9.57% in 2014. The percentage of infants classified as low birthweight (<2500 g) also rose slightly, from 8.00% to 8.07%, from 2014 to 2015. Infants classified as moderately low birthweight (1500–2499 g) increased from 6.60% to 6.67%, while the very low birthweight rate (<1500 g) remained stable at 1.40%. Advances in medical intervention and treatment have improved the survival of premature infants including the population of very low birth-weight infants, placing an ever-growing emphasis on improving the long-term developmental outcomes for this most vulnerable pediatric population.

In 1986, Public Law 99-457 was enacted to provide access to federal funding, so that each individual state could begin implementation of early intervention programs for at-risk children from birth to 5 years of age. At the same time, research by Als was initiated to determine if changes made even earlier during infant care in the neonatal intensive care unit (NICU) could have a long-lasting positive impact on the cognitive and behavioral outcomes of premature infants.<sup>2,3</sup>

Als studied the impact of the environment in the NICU on the developing brain of the premature infant and proposed a framework for interpreting and responding to an infant's behavioral cues and providing care-based interventions to address the noxious effects of environmental stress upon the neonate.<sup>4-6</sup> Multiple studies have demonstrated the positive effects of these "developmental interventions" in the NICU upon brain structure, motor organization and development, and longer-term cognitive and behavior outcomes.<sup>7-13</sup>

This article proposes that establishing a continuum of services beginning in the NICU and transitioning through careful developmental and interprofessional follow-up and availability of early therapeutic and educational interventions following discharge would best support the achievement of optimal outcomes for premature infants. Current protocols followed at the Joseph M. Sanzari Children's Hospital at Hackensack University Medical Center have been utilized for illustrative purposes.

### ***Getting off to a Good Start: Implementing Developmental Care in the Neonatal Intensive Care Unit***

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In the authors' NICU, developmental care relates to

- Practices and protocols guiding medical interventions
- Approaches to physical care
- Guidelines for positioning and handling
- Noise and lighting control
- Relationship building and parental participation in infant care
- Oral feeding practices

The interprofessional team includes neonatologists, physician assistants, advanced practice and bedside neonatal nurses, physical and occupational therapists, speech-language pathologists, child life specialists, and social workers.

Emphasis on comfort care during medical procedures to minimize pain and stress includes providing non-nutritive sucking to promote calming and neurologic organization paired with sucrose, as well as hand hugging (cradling of the head with the hands). Nursing staff, child life specialists, and parents when appropriate can be present to provide comfort care during medical procedures. Clustering physical care promotes periods of uninterrupted rest/sleep and energy conservation. Physical and occupational therapists provide guidance for nursing and parents with respect to provision of an individualized developmental care plan to reduce environmental stress. Optimal positioning for postural support, skull shaping and energy conservation, as well as, handling techniques that encourage positive positional transitions are taught. Parents

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