

Research evaluates 18-month neurobehavioral outcomes in single-family room NICU

August 9 2016

The prevalence of preterm birth - the birth of an infant prior to 37 weeks of pregnancy - is a significant health problem that has increased over the past two decades. According to the Centers for Disease Control and Prevention (CDC), preterm birth affects nearly 500,000 babies each year, or one of every eight born in the U.S. While medical care has improved survival rates for preterm infants, questions remain about ways to positively impact the neurodevelopmental outcomes of preterm infants. New research suggests that the environment of care in a neonatal intensive care unit (NICU) contributes not only to the short-term, but also to the long-term neurobehavioral development of preterm infants.

Research led by Barry M. Lester, PhD, director of the Brown Center for the Study of Children at Risk at Women & Infants Hospital of Rhode Island and professor of psychiatry and pediatrics at The Warren Alpert Medical School of Brown University, found the single greatest contributor to long-term neurobehavioral development in [preterm infants](#) is maternal involvement - and that a single-family room NICU allows for the greatest and most immediate opportunities for maternal involvement. The research, entitled "18-Month Follow-Up of Infants Cared for in a Single-Family Room Neonatal Intensive Care Unit," has been published in the current issue of *The Journal of Pediatrics*.

"We found that the amount of maternal involvement was greater shortly after birth, increased rapidly, peaked within the first two weeks, and was

then sustained in the single-family room NICU, in contrast to a more gradual increase in maternal involvement in an open bay NICU," explained Dr. Lester. "In other words, the single family room NICU appears to 'jump start' high maternal involvement."

Dr. Lester and his colleague, James F. Padbury, MD, pediatrician-in-chief and chief of Neonatal/Perinatal Medicine at Women & Infants Hospital and the William and Mary Oh - William and Elsa Zopfi Professor of Pediatrics for Perinatal Research at the Alpert Medical School, published research in September 2014 in Pediatrics, which found that a single-family room NICU environment provides for appropriate levels of maternal involvement, developmental support, and staff involvement, which are essential to provide the kind of care that can optimize the medical and neurodevelopmental outcome of the preterm infant and lead to the development of preventive interventions to reduce later impairment.

An 18-month follow-up was undertaken that compared [infants](#) born earlier than 30 weeks gestation at Women & Infants Hospital - 93 were cared for in an open bay NICU and 123 were cared for in the single-family room NICU. Infants were divided into high vs. low maternal involvement based on days per week of kangaroo care, breastfeeding, bottle feeding, and maternal care. Infants with high vs. low maternal involvement in the single-family room and open bay NICUs were compared on the Bayley Cognitive, Language and Motor scores and Pervasive Developmental Disorders autism screen.

Dr. Lester said, "What we learned is that of the four components of maternal involvement, kangaroo care (a method of caring for premature babies in which the infants are held skin-to-skin with a parent, usually the mother, for as many hours as possible every day) was the most important contributor, followed by maternal care. It is likely that kangaroo care, when started early, triggers a cascade of maternal care,

breastfeeding and bottle feeding."

"In the original study, we found that the single-family room model of care facilitated maternal involvement, and that more maternal involvement was related to better neurobehavioral outcomes at NICU discharge," continued Dr. Lester. "For this most recent study, we hypothesized that maternal involvement would be associated with improved neurodevelopmental outcome at 18 months, especially in infants cared for in a single-family room NICU. Our study results suggest, as hypothesized, that the improvements are sustained through 18 months. The fact that the early findings were maintained through 18 months suggests that the improvements could be permanent. Notably, infants in a single-family room NICU also had fewer symptoms of autism spectrum disorder (ASD), so that model of care might also help combat ASD in preterm infants."

More information: pediatrics.aappublications.org/content/134/4/754

Provided by Care New England

Citation: Research evaluates 18-month neurobehavioral outcomes in single-family room NICU (2016, August 9) retrieved 6 May 2024 from <https://medicalxpress.com/news/2016-08-month-neurobehavioral-outcomes-single-family-room.html>

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