From the Japan Association of Research on Developmental Care

The review article titled “NIDCAP: A Systematic Review and Meta-analyses of Randomized Controlled Trials,” by Arne Ohlsson and Susan E. Jacobs (Pediatrics 131[3], March 2013, e881–e893), encouraged us to pursue our efforts to introduce the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) to Japan, despite their misleading conclusion, because their data show better outcomes in several respects for infants cared for by NIDCAP, without ill effects. Japanese statistics on survival rates and long-term outcomes of premature infants, especially those on multifactorial clinical outcomes such as major sensorineural disability at 18 months, are better than those of North America and of European countries. But we are concerned about the high incidence of ADHD, autism, and learning disorders among those who avoid major neurologic handicaps. These disorders are known to be related to high-level brain function impairment and are speculated to result from continuous, excessive stress to these infants during their stay in the NICU. Therefore, we are switching from aggressive medical treatments to save lives and lower major neurologic sequelae to gentle, nurturing care. There are also substantial basic research studies to support this approach, such as increment of apoptosis of neurons in the frontal lobe. We know statistics often obscure the reality behind the clinical data, especially those on multifactorial clinical outcomes. Because their article shows that NIDCAP does not compromise the outcomes of premature infants, we continue to provide gentle care to our most vulnerable infants while improving our modalities and skills.

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None declared
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NIDCAP Federation International Response

Ohlsson and Jacobs1 have again examined the NIDCAP and the research on its efficacy. The Board of Directors of the NIDCAP Federation International (NFI) deems their report an invalid and misleading evaluation of a well-established and demonstrably effective program.

In fact, they summarize an array of impressive results, most from randomized controlled trials in which NIDCAP treatment of premature infants produced statistically significant effects (tables, figure, and findings all from Ohlsson & Jacobs, 2013),1 including reduced hospitalization (Table 3); earlier (younger postmenstrual age) hospital discharges (Table 3); increased weight gain (Table 4); improved neurologic markers, seen on both electroencephalography and MRI, and improvements on several standard assessment tools, including the Bayley Mental Development Index, Bayley Psychomotor Development Index, and Assessment of Preterm Infants’ Behavior (Table 2 and Fig 3).1

By applying inappropriate criteria to measure success, the authors dismiss the substantive, impressive, and clinically significant findings summarized in the report. Specifically the authors set the bar for “effectiveness of NIDCAP” in terms of “the composite of death or major sensorineural disability at 18 months” and secondary, short-term outcomes such as “in hospital deaths, chronic lung disease ...necrotizing enterocolitis, [and] intraventricular hemorrhage.” In contrast, NIDCAP is aimed at a different array of important targets. Heidelise Als, who designed and founded NIDCAP more than 30 years ago, states, “NIDCAP’s goal is to prevent unexpected sensory overload and pain, and enhance strength and competence” of infants born prematurely.2 Such pathways are guided by a combination of observation, assessment, and nursery interactions. These guide regimens of holding, positioning and movement, environmental modification, parental involvement, and staff education that improve developmental trajectories. This is where the bar for NIDCAP should be placed. These are the standards by which NIDCAP is evaluated appropriately, with significant results in both medical and developmental parameters.

NIDCAP rests on a large body of neurodevelopmental data and evidence-based principles, particularly in areas involving sensory system development, relations between stress hormones and autonomic development, regulation of infant sleep and attention states, and the emergence of parent–infant interactions. These core areas were overlooked or even ignored in the meta-analysis. As NIDCAP professionals representing a range of relevant disciplines, along with parents who have experienced the developmental challenges of prematurely born infants, we seek to understand how NIDCAP works and the parameters affecting each of its elements. Among the research questions explicitly identified by Als et al (2004)2 and ignored by Ohlsson and Jacobs (2013)1 are “neurophysiological and brain structural outcomes,” “effects on parents,” and “effects on staff and systems.” Perhaps Ohlsson and Jacobs’ resistance to evaluating NIDCAP on relevant dimensions reflects their own resistance to system change. NIDCAP has already changed NICU practice, contributed to novel environmental features, increased parental involvement, and improved the experiences and developmental outcomes of premature infants worldwide. We look
forward to continuing to improve the future of infants and parents who experience intensive care.

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Conflict of Interest:
All authors are members of the Board of Directors of NIDCAP Federation International. The federation was incorporated in 2001 as not-for-profit membership organization that educates and supports NIDCAP professionals in NICUs around the world and has certified 21 NIDCAP Training Centers in 10 countries (with more certifications under way).

REFERENCES

NIDCAP and Developmental Care: A European Perspective
The systematic review by Ohlsson and Jacobs on the NIDCAP approach concluded that there is no evidence that NIDCAP improves long-term neurodevelopmental or short-term medical outcome.2 Despite their conclusion, “Because NIDCAP was not effective in reducing adverse outcomes, performing cost-effectiveness analyses became redundant,” they report that NIDCAP is associated with a better daily weight gain, a shorter hospitalization, and an increase in Bayley Scale of Infant Development scores at 9 months.

Developmental care and environmental strategies emerged in response to the background of the potential harmful effects of traditional NICU settings. When neonatal intensive care started in the 1960s, the priority was survival, as in adult intensive care. It took some time before the effects on the vulnerable growing preterm brain from the stressful environment and mother–infant separation were recognized. Many NICUs still consider technical aspects of care as a priority and parents as visitors. In Europe most elements of Early Developmental Care (EDC) are routinely applied in Scandinavian countries, but an increasing number of nurseries around Europe are changing their practices. NIDCAP is difficult to study because it embraces a range of interventions and behavioral changes, and the level of intervention is not standardized. Conventional randomized trial methods are difficult to use with such global intervention strategies, and it is therefore difficult to assess them.

There is little need for randomized controlled trials to evaluate the importance of pain and stress management, sleep protection, avoidance of bright light and noise, hemodynamic changes related to handling, proper positioning, skin-to-skin contact, breastfeeding, parental presence, and a supportive patient–caregiver relationship. All these aspects have been studied.2 Furthermore, these are markers of respect for the infant.

There is sufficient scientific evidence of the value of an adequate physical environment, reducing overwhelming sensory stimulation, and increasing sensitive parent caregiving, on the brain development of preterm infants. NIDCAP addresses all these issues and is probably the best-defined and most evaluated method for optimizing care, allowing caregivers to tune in to the infant’s behavioral responses, with parents as the primary caregivers. Rather than discouraging the promotion of NIDCAP and thus EDC, we should focus on the large body of evidence from the neuroscience literature that clearly confirms the deleterious effects of NICU stress and highlights the effects of EDC and parental intervention.4,5 There is a need to engage in high-quality research using techniques learned from the environmental enrichment literature. We academic neonatologists need to offer validated and affordable teaching programs to implement EDC. We have therefore created a European association for developmental care. The parent-initiated European Foundation for the Care of Newborn Infants strongly supports a general implementation of NIDCAP and developmental care. The findings of the article by Ohlsson and Jacobs could dissuade caregivers from devoting all their energies, making this initiative an important step to more neurodevelopmentally driven NICUs and high-quality support for parent–infant interaction.

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# NIDCAP Federation International Response

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