

Strengthening Early Intervention for Very Preterm Infants

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In this issue of *Pediatrics*, Spittle et al¹ provide an important follow-up report at 8 years to their randomized trial of early intervention for very preterm infants. The intervention was delivered over 9 sessions during the first year of life and was based on a strong theoretical approach. The well-defined set of services aimed to enhance caretakers' ability to foster the development of their children and to reduce parental stress.² At planned follow-up assessments at 2 and 4 years of age,^{3,4} the authors found no difference between the intervention and control groups in the children's cognitive, language, and motor scores. They did observe a persistent effect of the intervention on decreased mental health symptoms in caretakers at both points. The current follow-up was undertaken based on the relationship between child development and parental mental health, with the expectation that the persistent advantage in the intervention group would result in better child outcomes. The authors employed an expanded test battery to go beyond intelligence to examine specific domains of child cognitive development, attention, motor development, and academic achievement. With the exception of less impairment in math achievement, no differences in child outcomes were observed despite persistent lower levels of depressive symptoms in caregivers.

Although the Spittle et al¹ study contributes to the literature on the impact of early intervention on the longer-term outcomes of very preterm infants, it also raises many questions about our approaches to such

interventions. Namely, these questions concern how we determine the appropriateness of the intervention in terms of dosage (number of sessions), intensity (frequency of sessions), and content. The intervention in the Spittle et al¹ study consisted of 9 sessions delivered in the home by a team of a physical therapist and psychologist supported by a multidisciplinary team.² The intervention focused on enhancing motor skills and providing psychological support for the parents with the flexibility to address expressed parental concerns. The approach is consistent with many of the studies described in a recent review by Spittle et al.⁵ However, as the review illustrates, experimental assessments of early intervention programs vary widely in terms of sample size, as well as in the timing, setting, duration, intensity, and focus of the intervention on family support, developmental/educational approaches, or motor activities.⁵ Although the literature provides proof of principle that peri- and post-discharge interventions may improve outcomes in premature infants, it does not indicate what the optimal strategy would be.

The experience of providing early intervention for healthy, poor children suggests some strategies for future efforts. Programs with long-term positive outcomes can be characterized as child-focused educational experiences with well-qualified teachers using explicit curricula. Although many programs incorporate home visiting, they do so on a much more intense schedule than that in the Spittle report.¹ In

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addition, several interventions rely on intensive center-based educational interventions.^{6,7} Models relying exclusively on home visiting or relying on the parent to deliver developmental care are less effective.⁶ An adaptation of one of the more successful models with an intensive home visiting schedule and center-based education has been shown to improve the cognitive and behavioral outcomes of very-low-birth-weight infants immediately after the intervention.⁸ However, the advantages conferred by the intervention did not persist.⁹ By comparison, the relatively modest intervention of Spittle et al¹ was unlikely to achieve such outcomes despite the persistence of better mental health in the caretakers, a result consistent with the interventions for disadvantaged children focused on family support.⁷

What, then, does this experience suggest about the next steps in establishing effective early interventions for preterm infants? The first is clearly specifying the target or outcome. In the Spittle report,¹ the family support component appears more effective than the other parts of the intervention, although this does not seem to be the primary focus of the program. The second step is to measure the effect of the intervention with appropriately focused assessments. Although IQ and its subdomains are important,

the literature on healthy, socially disadvantaged children indicates that, although IQ differences fade, achievement differences emerge.⁶ Finally, aspects of the intervention, such as intensity, duration, and mode of delivery, need to be examined. Although the literature on healthy disadvantaged children suggests that relatively short-term (2–3 years) interventions are effective,⁶ these results might not pertain to very preterm infants with complex medical and educational needs. This population of children may require support of various types throughout their educational course to succeed.

These comments are not meant to diminish the importance of the finding of a persistent effect on parental mental health. Parental well-being is an important outcome in and of itself and this effect may have benefits for children not reflected in cognitive testing. Rather, they are meant to guide the next generation of early intervention experiments and improve the outcomes of very preterm children.

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