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The very question of future development of extremely preterm infants

The survival rates for extremely preterm infants, born at <28 weeks of gestation, have markedly improved over the past two decades and this has raised concern over a possible increase in morbidity. Due to advances in perinatal, neonatal and paediatric care, our greatest fears have not materialised. Instead, most infants born preterm these days function in the same way as their term-born counterparts (1). The clinical challenge is to recognise those preterm infants who face a higher risk of a wide range of disabilities, and the most common issues at the moment are cognitive and behavioural problems. A systematic review that was published online in January 2018 looked at 30 studies covering a total of 10 293 preterm infants born before 32 weeks of gestation and/or with very low birthweights of <1500 g after 2006. It estimated that 20.6% had motor delays at approximately two years of corrected age, with a 95% confidence interval of 13.9–29.4, and that the figures for cognitive delays were 16.9% (10.4–26.3) on the basis of developmental scales (2). Despite extensive meta-analyses and outcome research after very preterm births, the clinician at the bedside of an extremely preterm infant in an individual neonatal intensive care unit is still uncertain about the extent to which they will face these delays.

One of the major challenges of interpreting the results of any outcome studies or systematic reviews on preterm infants is the heterogeneity of research designs (2). There are wide differences in reporting active treatment policies at birth (3), background mortality rates (3), inclusion and exclusion criteria such as genetic disorders, sociodemographic characteristics, parental education, length of follow-up and the exact measures used and definitions of outcome. All of this might result in flaws with regard to the clinical impact of the study. Brain imaging protocols, magnetic resonance imaging (MRI) settings and expertise levels differ between centres, resulting in a wide variation in sensitivity and specificity of brain MRI findings, for example as predictors of cerebral palsy (4).

It is also evident that the landscape of classical phenotypes of preterm morbidity and outcomes is changing. In this issue of *Acta Paediatrica,* Brumbaugh et al. (5) use the National Institute of Health consensus definition of bronchopulmonary dysplasia (BPD) to define modern BPD. Using this classification by severity, they report that modern BPD may not, in itself, translate to poor early cognitive outcomes that are similar to classic BPD. This is a concrete message that tells clinicians like me that we need to prepare to change our thinking about the causal connections between neonatal morbidities and outcome. The decreasing trend of cerebral palsy, even among extremely preterm

infants (2), has already changed our perceptions of the outcomes of prematurity. At the same time, the severity of cerebral palsy in preterm infants has decreased (6). As a clinical observation, it has also been commented that the main type of cerebral palsy in preterm survivors has changed from bilateral spastic type to unilateral spastic cerebral palsy.

There is strong demand for harmonising outcome studies to enhance the accumulation of accurate prognostic information. The 2016 paper by Rysavy et al. (7) provided recommendations for reporting outcomes of extremely preterm births to improve the dialogue about the topic and enable us to compare outcomes between different studies. This distinctive paper serves as a valuable resource for everyone carrying out outcome studies of preterm infants.

When the parents of an extremely preterm infant who has a severe BPD and unilateral periventricular haemorrhagic infarction ask me about their child's future development, which is the most important factor after their survival, what valid evidence do I use as the basis for my answer? Despite the research that has been carried out to date, the question still remains under debate. We still need to know so much more.

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References

1. Raju TNK, Buist S, Blaisdell CJ, Moxey-Mims M, Saigal S. Adults born preterm: a review of general health and system-specific outcomes. *Acta Paediatr* 2017; 106: 1409–37.
2. Pascal A, Govaert P, Oostra A, Naulaers G, Ortibus E, van den Broeck C. Neurodevelopmental outcome in very preterm and very-low-birthweight infants born over the past decade: a meta-analytic review. *Dev Med Child Neurol* 2018. https://doi.org/10.1111/dmcn.13675.
3. Marlow N. The elephant in the delivery room. *N Engl J Med* 2015; 372: 1856–7.

4. de Vries LS, van Haastert IC, Benders MJ, Groenendaal F. Myth: cerebral palsy cannot be predicted by neonatal brain imaging. *Semin Fetal Neonatal Med* 2011; 16: 279–87.
5. Brumbaugh JE, Colaizy TT, Patel NM, Klein JM. The changing relationship between bronchopulmonary dysplasia and cognition in very preterm infants. *Acta Paediatr* 2018; 107: 1339–44.
6. van Haastert IC, Groenendaal F, Uiterwaal CS, Termote JU, van der Heide-Jalving M, Eijsermans MJ, et al. Decreasing incidence and severity of cerebral palsy in prematurely born children. *J Pediatr* 2011; 159: 86–91.
7. Rysavy MA, Marlow N, Doyle LW, Tyson JE, Serenius F, Iams JD, et al. Reporting outcomes of extremely preterm births. *Pediatrics* 2016; 138: e20160689.

