Seminars in Fetal and Neonatal Medicine 24 (2019) 1–2

Contents lists available at ScienceDirect

Seminars in Fetal and Neonatal Medicine

journal homepage: www.elsevier.com/locate/siny

Editorial

The continuum of late preterm and early term births

As noted in a recent "perspective" it is now well over a decade since the US National Institute of Child Health and Human Development (NICHD) expert panel recommended that infants born between 34^0 and 36^6 weeks be designated "late preterm" (LP) rather than being thought of as near-term and therefore healthy and mature without immediate or later problems related to their gestation [1]. More recently infants born at 37^0–38^6 weeks have been called "early term" (ET) to differentiate these births from those at full gestation. In this issue Delnord and Zeitlin show that in high-income countries LP births range between 3% and 6% of all births and account for around 75% of preterm births, whereas ET births account for 15–30% of all births. Given their numerical importance, there has been a surge in research concerning both groups.

However, assessing gestation in humans is not an exact science, as discussed by Delnord and Zeitlin, even though we are now generally more accurate than in the past. In high-income countries there are still different methodologies in use and in other parts of the world such as Southern Asia and Sub-Saharan Africa, which is where a large proportion of preterm infants are born [2], there is frequently even less precision. So it makes sense to talk about a continuum without non-physiological cut-off lines. This continuum is arrestingly illustrated in Fig. 1, which relates the risk of special education need (SEN) to gestational age in more than 400,000 Scottish children [3]. SEN was recorded for 4.7% of children born at 40 weeks gestation, with 37–39 weeks and 33–36 weeks being 1.16 and 1.53 times more likely, respectively, to have SEN. And the Scottish data are not unique. For instance, there are similar trends in attention deficit/hyperactivity disorder reported from Finland [4] and hypertension in young adults from Sweden [5]. There are two important messages here. First, the prevalence of SEN, and a range of other problems, in LP and ET births is low – much lower than in very preterm births – and the great majority of individuals born at these gestations are not affected. Second, because there are many more births at these gestations than very preterm, the societal burden from ET and LP births is greater.

In this issue, leading researchers in the field cover a range of topics concerning the continuum of LP and ET births. Delnord and Zeitlin also look at some of the trade-offs that clinicians face concerning deliveries near term. Mariani and Vain discuss the "epidemic" of non-medically indicated pre-labour caesarean sections near term in Latin America and argue that as well as the purely medical perspective there are many complex ethical and sociocultural factors to consider.

Stavros reviews the economic burden of LP and ET births – data that should help focus health policies around the globe.

To make a difference it would help if we could predict preterm delivery more accurately; Suff, Story, and Shennan review established methods, recent developments and possible future advances. White and Newnham show that it is often possible to safely reduce the number of LP and ET births, although better tools are required to be able to identify the at-risk fetus where delivery earlier than term could be life-saving. Haviv, Said, and Mol review the place of antenatal corticosteroids (ANS) in LP and ET births. Despite a high-quality randomised trial showing significant improvement in the nominated primary outcome with ANS, the high numbers of fetuses who could be exposed to ANS unnecessarily and the possibility of side-effects mean that it is not always a straightforward decision whether to use ANS, especially in scenarios such as multiple pregnancies that are under-represented in trials.

Muelbert, Harding, and Bloomfield consider whether we can improve both early and later outcomes for LP and ET infants through enhanced nutrition. They note that there may be a trade-off between achieving faster earlier growth to enhance adult neurocognitive functioning but without increasing the risk of later obesity. Despite many uncertainties, receipt of mother's own milk remains optimal for these infants and the means to support achieving that are discussed. Moving to consider outcomes after birth, Muganthan and Boyle review advances in knowledge of early childhood health and morbidity, with an emphasis on respiratory function. Woythaler reviews neurodevelopmental outcomes and notes that a key question, as yet unanswered, is whether LP infants with adverse outcomes are a distinct group with "overt brain injury" among the majority with normal potential, or whether LP outcomes fit a normal distribution with a decreased mean compared to the term population. In other words, is there a certain vulnerable subgroup or does the "LP phenotype" extend even to those with an uneventful neonatal course.

One approach to this question is through studies of both brain magnetic resonance imaging and neurobehavioural assessment in the neonatal period and early infancy after LP birth, reviewed by Cheong, Thompson, Olsen, and Spittle. They conclude that more research needs to be done, including longer-term outcome studies. Finally, Kajantie, Strang-Karlsson, Evensen, and Haaramo review the existing adult outcome data after LP and ET birth. They identified 53 cohort or register studies, although these are predominantly from Scandinavia and may not be readily translatable to other settings with higher preterm birth rates and greater levels of inequality in society, including the availability and uptake of education and healthcare. Despite increased risk factors in LP adults this review did not identify increased adverse outcome for most health measures but did find slightly less good cognitive and socio-economic outcomes.

We have come a long way in 10 years, but the science of LP and ET births is barely yet out of infancy and childhood. The authors of these chapters point to future research directions that should take us beyond these early years.

https://doi.org/10.1016/j.siny.2018.10.004

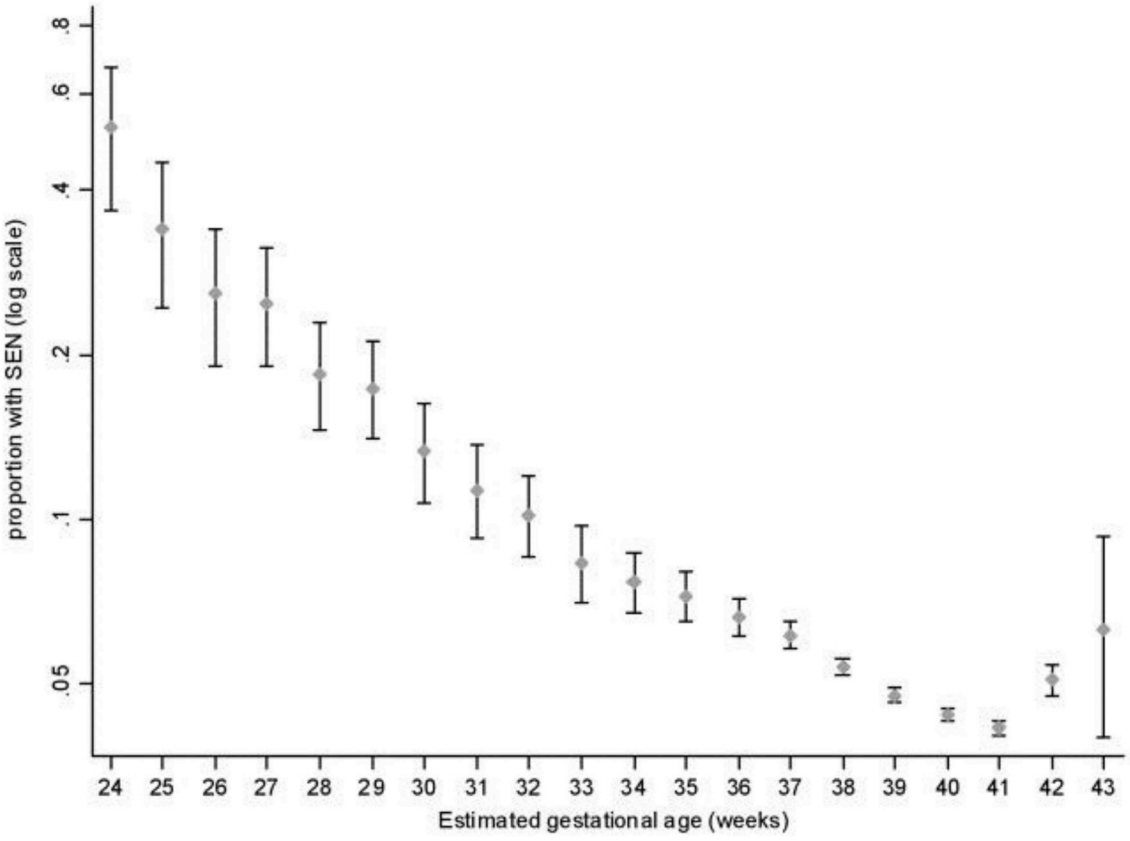

Fig. 1. Prevalence of special education need (SEN) in Scottish children by gestation at birth [3].

References

[1] Raju TNK. The "late preterm" birth – ten years later. Pediatrics 2017;139:e20163331.
[2] March of Dimes, PMNCH, Save the Children, World Health Organization. Howson CP, Kinney MV, Lawn JE, editors. Born too soon: the global action report on preterm birth. Geneva: WHO; 2012.
[3] MacKay DF, Smith GC, Dobbie R, Pell JP. Gestational age at delivery and special educational need: retrospective cohort study of 407,503 schoolchildren. PLoS Med 2010;7:e1000289.
[4] Sucksdorff M, Lehtonen L, Chudal R, et al. Preterm birth and poor fetal growth as risk factors of attention-deficit/hyperactivity disorder. Pediatrics 2015;136:e599–608.
[5] Crump C, Winkleby MA, Sundquist K, Sundquist J. Risk of hypertension among young adults who were born preterm: a Swedish national study of 636,000 births. Am J Epidemiol 2011;173:797–803.

Brian A. Darlow*
Department of Paediatrics, University of Otago, Christchurch, New Zealand
E-mail address: brian.darlow@otago.ac.nz

Jeanie L.Y. Cheong
Royal Women's Hospital, Parkville, VIC, Australia

* Corresponding author.