

# Delivery room practices for extremely preterm infants: the harms of the gestational age label

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Interventions for extremely preterm infants bring up many ethical questions. To answer these questions, data are needed. The investigators of the Epipage-2 study have conducted a rigorous investigation: they report outcomes for all 2145 neonates born between 22 and 26 weeks of gestational age (GA) in France in 2011.<sup>1</sup> Their primary outcome measure was the provision of life sustaining interventions in the delivery room and survival statistics. They show that, over a year in France, only one baby born before 24 weeks GA survived to neonatal intensive care unit (NICU) discharge. NICU admission was withheld for 96%, 91%, 38% and 8% of neonates at 22, 23, 24 and 25 weeks of GA. This data is not surprising, as the French policy recommends non-intervention for the smallest babies and practices conform to the policy.

Six other European countries have similar non-treatment policies.<sup>2</sup> National policies generally based their recommendations on local or national outcome data. But policies do not just reflect outcomes, they shape them. There is an iterative relationship between policies, guidelines and facts. Most other industrialised countries offer interventions at 23 weeks and, in those countries, many more such babies survive and most survivors do not have severe impairments.

Generally, paediatricians and policy makers favour treatments that improve survival rates. Treatment for extremely preterm infants is the exception to this general rule. There are three common arguments against the treatment of extremely preterm neonates. First, it is seen as futile. Second, it is seen as too expensive. Third, it is thought that the

majority of survivors are disabled. The medical literature does not support any of these arguments.

Treatment of neonates born at 22 and 23 weeks is clearly not futile: with interventions 20%–70% of such babies survive.<sup>3</sup> No other treatment with such survival rates or long-term outcomes would be called futile.

Interventions for extremely preterm infants are expensive. Prolonged NICU stay can cost hundreds of thousands of dollars, but NICU care has been shown to be remarkably cost-effective. Doyle and colleagues estimate that NICU care costs <\$10 000 per quality-adjusted life-year. It has been demonstrated that at this price, NICU care, even for the tiniest babies, is more cost-effective than routine Pap smears, treatment of severe hypertension or coronary artery bypass surgery.

Extremely preterm survivors clearly have higher rates of disabilities than do babies born at or near term, but that is not the relevant comparator. For the question of whether policies should be based on GA, one must compare outcomes for babies born below the cut-off to those born just above it. GA has not been demonstrated as being a reliable predictor of long-term outcome before 26 weeks. Furthermore, GA has not been demonstrated to be related to subjective quality of life, from the survivors nor the families' perspectives.

Despite an overall non-interventionist approach, Perlberg *et al* report that many neonates born before 27 weeks GA received interventions. In their cohort, infants with a birth weight of <600 g or who were born <24 h after the mother's admission were less likely to receive intensive care. In spite of this 'pre-selection' of the 'lower risk' patients for active treatment, survival of babies at 24, 25 and 26 weeks GA who are admitted to the NICU and receive intervention are worse (at 52%, 65% and 79%) than outcomes for comparable babies in many other countries. Perlberg *et al* confirm what has already been demonstrated in others countries: a non-interventionist approach to the smallest infants lead to adverse outcomes for *all* extremely preterm infants. Moreover, this does not lead to better

long-term outcomes for survivors. Articles reporting follow-up of ex preterm infants in France demonstrate that outcomes are comparable to those in many other countries, and lower than in some.

We suggest that an important ethical question needs to be considered. Are similar policies applied to other groups of patients? In our view, it makes sense to allocate healthcare resources in a way that maximises good and minimises bad outcomes, but the standards for making allocation decisions should be applied fairly to different groups of patients. Policies that limit treatment for babies born at lower gestations but do not limit treatment for patients with even worse outcomes—for example, patients with advanced cancer or patients who require cardio-pulmonary resuscitation—are policies that unfairly deny interventions to one group of patients even though that group has outcomes that are demonstrably better than other groups. We would be surprised if there was another condition in France where vulnerable incompetent individuals with a potential survival of 50% (with half of survivors unimpaired) routinely receive comfort care. If investigators had published that survival after head trauma, meningitis, stroke or severe burns in France was among the lowest in the world, we think there would have been more concern about the results, and these would not merely be viewed as a cultural curiosity.

But there is a caveat. Outcomes for babies born at the borderline of viability will only improve if practice changes. Perlberg *et al* report that about half of infants born before 24 weeks GA were born outside of a level 3 maternity unit, that at 24 weeks, only 57% had received antenatal steroids. Changes require cooperation between policy makers, obstetricians and neonatologists. Policy makers will have to develop efficient regionalised referral systems. Obstetricians will have to give antenatal steroids and consider caesarean sections at lower gestations. Neonatologists will have to be prepared to tell parents that the majority of neonates survive at 24 weeks, and that survival is possible at 23 weeks. Changes can happen with hard work. But the attitudes and pessimism regarding extreme preterm infants require more than hard work: they require a change in philosophy. There is no easy way to make decisions regarding life and death but there are clear ways to improve outcomes for premature babies. Labelling infants and taking life and death decisions according to completed 7-day periods of GA is

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## Editorial

scientifically flawed and ethically questionable. Why do we need guidelines only for preterm infants? We need all doctors to be adequately educated, including in ethical decision-making, covering all ethically fraught clinical interventions for patients of all ages.

There are three steps necessary to improve outcomes of extremely preterm infants. The first is to obtain accurate data on our practice and make it transparent. The second step is to examine the outcomes with curiosity and humility. Perlberg *et al* have taken these two steps. The last step requires a commitment to implement change and to re-examine our outcomes. Time will tell if France is ready to take that step.

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