On the limits of viability: toward an individualized prognosis-based approach

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Citation

Proost, L. de, M'hamdi, H. I., Verhagen, A. A. E., Reiss, I., Geurtzen, R., & Verweij, E. J. (2020). On the limits of viability: toward an individualized prognosis-based approach. *Journal Of Perinatology*, *40*(12), 1736-1738. doi:10.1038/s41372-020-00793-x

Journal of Perinatology (2020) 40:1736–1738
https://doi.org/10.1038/s41372-020-00793-x

COMMENT

On the limits of viability: toward an individualized prognosis-based approach

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Received: 18 May 2020 / Revised: 24 July 2020 / Accepted: 10 August 2020 / Published online: 21 August 2020

Consider two fictional cases in The Netherlands: (a) a 41-year-old woman, $23^{3/7}$ weeks pregnant with a female fetus of estimated 600 g, and (b) a 25-year-old woman, $24^{1/7}$ weeks pregnant with a male fetus of estimated 500 g. Both women are in imminent labor. Although the chances for survival of the girl might be better compared to the boy, no neonatal intensive care is offered to the parents of the girl because of the GA of $23^{3/7}$ weeks. Instead, palliative comfort care will be offered. The parents of the boy will be offered full counseling and if desired, after a process of shared decision-making, initiation of neonatal intensive care [1].

Decisions about early intensive or palliative comfort care at the edge of neonatal viability are challenging. Despite international efforts to emphasize the importance of not focusing solely on gestational age (GA) to make these decisions [2–5], The Netherlands still relies on a GA-based guideline: the earliest GA for offering neonatal intensive care is strictly $24^{0/7}$ weeks. We, as Dutch professionals, would like to substantiate our criticism of these national guideline as complex decisions about intensive neonatal care should not be based on GA alone [6–9]. Moreover, we plea for a review of the Dutch, and other strictly GA-based guidelines, on a multidisciplinary basis. In what follows, four arguments will be provided to support this statement.

First, uncertainty is inevitable when it comes to objectively pinpointing the correct GA. Since determining the GA of a fetus is challenging and unsure, it should preferably be referred to as an estimated GA (e-GA). An e-GA being 24 weeks could be $24^{2/7}$ weeks but also $23^{5/7}$ weeks [10]. Thus, we need to factor in these possible measurement errors. Due to this uncertainty, it seems unjustifiable to only provide neonatal intensive care to those estimated to be born from 24 weeks, especially when GA is the only factor taken into account to decide about a future care process. As Wilkinson et al. state: "this might lead to changes in the permissibility of resuscitation from 1 day to the next, a phenomenon that could be compared to a "Cinderella effect" (referencing the impact of the stroke of midnight in the Cinderella fairy-tale)" [6]. This does not entail that we should not consider e-GA at all or that we should lower the guideline toward an e-GA of 22 or 23 weeks. It entails that e-GA should be considered as one amongst other prognostic factors to be taken into consideration in decisions about care at the edge of neonatal viability.

Second, the cut-off at 24 weeks gestation is chosen because of statistics about survival. This insight however may be based on a "self-fulfilling prophecy" [11]. As Hendriks and Lantos claim: if no foetuses are treated at 22 or 23 weeks, then no such babies will survive [12]. The same authors refer to local hospital data claiming that there is a hundred percent mortality rate for extremely premature infants born earlier than 24 weeks. Such reported low survival rates then seem to justify the policy of not treating babies born earlier than 24 weeks, creating a self-justifying circle.

Third, it has been argued that GA-based guidelines reduce the complexity of a decision as it is clear-cut and available for every pregnant woman [12]. This, however,

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raises serious issues of fairness. It is instructive to take Aristotle's rule of thumb into consideration, for something to be fair we have to: "treat like cases as like" [13]. Important to note is that we have to identify what makes cases alike from a morally relevant perspective. An infant of $23^{2/7}$ and one of $24^{0/7}$ who may have equal chances to survive "in reasonably good health" are not treated equally when a GA-based guideline of 24 weeks is in place. Fairness seems to demand that infants with equal chances for survival "in reasonably good health" are treated equally. For this purpose, a guideline based solely on e-GA is inadequate and therefore unfair [5]. Albeit, considering that surviving "in reasonably good health" might have various meanings for different people, applying this in practice could be challenging. Moreover, parental values are of significance here [1, 11–13]. More research is needed on how to apply this rule of fairness, the idea of surviving "in reasonably good health", and the role of parental values in practice at the neonatal limits of viability.

Lastly, a guideline solely based on GA might evoke moral pressure because of the implicit default to treat when the GA threshold is reached. For example, even if the prognosis of fetus B, being born the 24th week is poor because of additional factors such as for example birthweight, the mother and the caregivers might still be more inclined to opt for neonatal intensive care. The existence of a sharp cut-off standard might implicitly communicate that one should always treat neonates when this threshold is exceeded. In other words, mothers and caregivers might be pressured into providing neonatal intensive care to a certain infant only because the limit of GA has been reached. Because of the possible harmful effects of such a "threshold bias", it is important to also take into account other relevant factors. Factors such as weight, gender, and fetal development, but also parental values, should be taken into account in the decision-making process [1, 14–16]. Moreover, a sharp cut-off might not be consistent with shared decision-making—which is explicitly recommended for making periviable decisions [1]. What justifies not sharing the decision just below the 24-week GA cut off, in which situation the interpretation of benefit-harm ratio also depends on personal values [1, 14–16]?

It is important to provide the parent(s) with useful prognostic information enabling them to make an informed, well-considered decision. More research is needed about what factors are significant when it comes to a prognosis, how to predict these, and whether these are cross-culturally applicable. Then, this could come with reduced moral pressure for the parent(s) as well as the caregivers to provide neonatal intensive care to all babies born from 24 weeks. Note that providing palliative comfort care is a not less significant option compared to neonatal intensive care and that both options should thus always be presented equally [1]. Especially for cases in the "gray zone" where prognostic uncertainty is often inevitable, presenting both options as being morally justifiable is of major importance.

Overall, every parent and future child is entitled to an individual evaluation of her medical situation. This, in combination with a process of shared decision-making with both parents and caregivers, has to lead to an individual care plan providing the future child with the best possible prospects that connect well to parental norms and values. Nonetheless, more research is needed to find the most feasible way to reach this required revision of the guidelines and overarching cultural change, taking into consideration all important stakeholders and society.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. Geurtzen R, van Heijst AFJ, Draaisma JMT, Kuijpers L, Woiski M, Scheepers HCJ, et al. Development of nationwide recommendations to support prenatal counseling in extreme prematurity. Pediatrics. 2019;143:e20183253.
2. NICHD Neonatal Research Network (NRN). Extremely preterm birth outcome data. NICHD Neonatal Research Network (NRN). https://www.nichd.nih.gov/research/supported/EPBO. Accessed 23 Jun 2020.
3. Tyson JE, Parikh NA, Langer J, Green C, Higgins RD. National Institute of Child Health and Human Development Neonatal Research Network. Intensive care for extreme prematurity–moving beyond gestational age. N Engl J Med. 2008;358:1672–81.
4. Rysavy MA, Horbar JD, Bell EF, Li L, Greenberg LT, Tyson JE, et al. Assessment of an updated neonatal research network extremely preterm birth outcome model in the Vermont Oxford Network. JAMA Pediatr. 2020;174:e196294.
5. Mercurio MR. The ethics of newborn resuscitation. Semin Perinatol. 2009;33:354–63.
6. Wilkinson D, Verhagen E, Johansson S. Thresholds for resuscitation of extremely preterm infants in the UK, Sweden, and Netherlands. Pediatrics 2018;142:S574–84.
7. Verweij EJ, Reiss IKM. Perinatal management for premature babies should be multidisciplinary and personalised. BMJ. 2020;368:m211.
8. Verweij E, Reiss I. Personalized medicine for neonates born prematurely. Ned Tijdschr Geneeskd. 2018;162:D3515.
9. Verhagen AAE. Het etiket van de zwangerschapsduur [The gestational age label]. Ned Tijdschr Geneeskd. 2017;161:D1600.
10. Knight B, Brereton A, Powell RJ, Liversedge H. Assessing the accuracy of ultrasound estimation of gestational age during routine antenatal care in in vitro fertilization (IVF) pregnancies. Ultrasound. 2018;26:49–53.

11. Mercurio MR. Physicians' refusal to resuscitate at borderline gestational age. J Perinatol. 2005;25:685–9.
12. Hendriks MJ, Lantos JD. Fragile lives with fragile rights: justice for babies born at the limit of viability. Bioethics. 2018;32: 205–14.
13. Aristotle. Nichomachean ethics, V.3. 1131a10-b15; Politics, III.9.1280 a8-15, III. 12. 1282b18-23.
14. Boss RD, Hutton N, Sulpar LJ, West AM, Donohue PK. Values parents apply to decision-making regarding delivery room resuscitation for high-risk newborns. Pediatrics. 2008;122: 583–9.
15. Haward MF, Gaucher N, Payot A, Robson K, Janvier A. Personalized decision making practical recommendations for antenatal counseling for fragile neonates. Clin Perinatol. 2017;44: 429–45.
16. Gaucher N, Nadeau S, Barbier A, Janvier A, Payot A. Personalized antenatal consultations for preterm labor: responding to mothers' expectations. J Pediatrics. 2016;178:130–4.