Resuscitation of Preterm Infants in Low and Middle-Income Countries

AN ETHICAL ANALYSIS

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BACKGROUND

- Preterm birth is a leading cause of mortality and morbidity for newborn infants. Resuscitation is often possible, yet is costly and associated with complications.
- Each year, approximately 780,000 infants are born extremely preterm (<28 weeks gestation) of which the majorities are in Low and Middle-Income Countries (LMICs) where limits on resources may impact the provision of medical care.
- In High-Income Countries (HICs), management guidelines exist about when resuscitation of Extremely Preterm Infants (EPIs) should be provided (Fig 1).
- In LMICs, such guidelines do not exist. In part, due to the lack of guidance, there is significant variation within countries as to the resuscitation thresholds used by clinicians (Fig 2). In these settings, relevant ethical guidance does not exist for clinicians making complex decisions involving poverty, disability and resource scarcity.

RESEARCH QUESTION

“How should clinicians make decisions about resuscitation of extremely preterm infants (EPIs) in low and middle-income countries (LMICs)?”

METHODOLOGY

- An ethical analysis was conducted, combining ethical theory with pragmatic considerations. This attempted to address a series of ethical questions that are central to decisions around resuscitation of EPIs in LMICs.
-Ethical reasoning was applied to the Republic of the Philippines as a case-study, incorporating and extrapolating data supplied from the Philippine General Hospital, Manila.
- From here, a generic step-by-step paradigm was developed for clinicians wishing to develop guidelines in other LMIC settings.

PART A: ATTEMPTING TO CONSTRUCT GUIDELINES USING A COST-EFFECTIVENESS ANALYSIS (CEA)

- This method aims to inform clinicians of a gestational age (GA) prior to which resuscitation should not be provided as the opportunity costs are too large.
- It was ultimately rejected based upon epistemic uncertainty relating to:
  (1) Insufficient data on costs and outcomes of preterm birth from the Philippines;
  (2) The amount we ought to allocate to neonates (i.e. the ‘cost-effectiveness threshold’ or ‘CET’) based upon the moral status of newborns.

Can we use imported data?
- Conclusions vary significantly if data is sourced from analyses conducted in HICs or LMICs.
- Data imported from the UK suggests that resuscitation should not be provided prior to 34 weeks GA. However, extrapolating data across regions with differing levels of income is likely to produce unreliable conclusions.
- Only one CEA has been conducted in a LMIC (Mexico) on resuscitation of EPIs. Data applied to the Philippines from this study suggests that resuscitation should be provided at all gestational ages. This analysis however, imported large amounts of data from HICs, with multiple assumptions made in its application to Mexico.
- Results vary significantly depending on the assumptions made in importing data from HICs to LMICs.
- Conclusions also vary if a different cost-effectiveness threshold (CET) is used for neonates.

How much should we allocate?
- The World Health Organisation (WHO) recommends investing in interventions when the cost/DALY averted is less than the GDP/Capita.
- This may not apply for neonates depending on one’s view of the moral status of newborns:
  - Moral Status of Neonate
    - No moral status
      - Using only parental quality of life in calculating QALYs or DALYs.
    - Gradualist accounts
      - Redirecting funds to older children with an interest in continued life.
    - Full moral status
      - Countries will need to discount their CET relative to the development of the neonate.
      - CET conducted in the same manner as other children/adults.

CONCLUSIONS

- It would be most appropriately employed through a national workshop of relevant professionals.
- The workshop should allow for revisions to be made to the framework.
- In many LMICs, there is a large degree of heterogeneity between private and public sectors. The optional nature of private care and the possibility of transfers suggests differences in the application of WAGE in each sector.
- When applied to both private and public hospitals within the same region, upper thresholds (of mandatory resuscitation) ought to be consistent, whereas lower thresholds (of withholding resuscitation) may differ (Fig 4).

The WAGE Framework represents a stepping-stone toward a more sophisticated prognosis-based guideline, enabling greater consistency of care for patients, and providing ethical guidance for clinicians making decisions about resuscitation of EPIs in LMICs.

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