



Published in final edited form as:

*Indian Pediatr.* 2012 March ; 49(3): 187–188.

## Intrapartum Perinatal Mortality

Robert L Goldenberg<sup>\*</sup>, Elizabeth M McClure<sup>#</sup>, and Beena D Kamath<sup>†</sup>

<sup>\*</sup>Drexel University, Philadelphia, USA

<sup>#</sup>Research Triangle Institute, North Carolina, USA

<sup>†</sup>Cincinnati Children's Hospital Medical Center, Ohio, USA

Intrapartum perinatal mortality, the deaths that occur during the period around birth, is a major problem in developing countries accounting for more than one million stillbirths and a similar number of neonatal deaths worldwide each year [1,2]. A number of authors have emphasized that the time encompassing labor and the 24 hours after birth is the most dangerous period for both the mother and fetus/neonate [3]. To begin to focus attention on these deaths, several authors have created a new measure of pregnancy outcome—the sum of intrapartum stillbirths and early neonatal deaths >2500g, with the denominator all births >2500g [4]. This measure, which considers mortality to fetuses alive on admission to the health facility (often determined by Doptone) through discharge of the neonate, typically at 6 or 12 hours of age, is an important concept, since it is only during this time period that care in the facility can influence the outcome. By eliminating births likely to be preterm, this measure should count only those births with a reasonable likelihood of survival – if the obstetric and early neonatal care were good. As such, some authors have advocated using this measure as an indicator of the quality of obstetric care [4,5]. In the study reported here, the authors have included fresh stillbirth as a surrogate for an intrapartum fetal death and only asphyxia-related neonatal deaths instead of all early neonatal deaths [6]. Considering only births occurring at >35 weeks or >2000g is also similar to the proposed indicator which only counts births of 2500g or more. Thus, we believe the authors have developed an appropriate outcome to measure the quality of intrapartum care [6].

We have been impressed that the same obstetric conditions that kill mothers are also responsible for most of the stillbirths and many of the neonatal deaths as well [7]. These conditions include preeclampsia/eclampsia, obstructed labor and the associated infection and hemorrhage, obstetric hemorrhage from other causes and especially abruption, as well as obstetric risk factors such as growth restriction, fetal distress, malpositions, and multiple pregnancies. We emphasize that most of the precursors of stillbirth and many of the precursors of neonatal asphyxia are obstetric in origin.

From our perspective, there are two ways to reduce the mortality and long term morbidity associated with asphyxia. One is to treat the asphyxiated infant in the postpartum period through a combination of neonatal resuscitation, ventilation and other supportive measures. However, potentially more important, is the prevention of antenatal and intrapartum asphyxia in the first place. Appropriate obstetrical care, both in the prenatal but especially in the intrapartum period, is crucial to reduce intrapartum stillbirth and neonatal asphyxia. For example, regular screening of all women in the antepartum period for preeclampsia with blood pressure measurements, with an appropriately timed delivery, can prevent progression to severe preeclampsia/eclampsia. Since most cases of eclampsia occur at or near term, an

---

Correspondence to: Robert L Goldenberg; rgoldenb@drexelmed.edu.

*Competing interests:* None stated.

indicated delivery should reduce both stillbirth and neonatal asphyxia without significantly increasing neonatal deaths from prematurity. Similarly, screening for fetal growth restriction with delivery close to term will have similar results. Close monitoring and appropriate care during labor to enable obstetrical providers to recognize conditions such as prolonged labor, placental abruption, placental previa, fetal malposition, and fetal distress, can allow for rapid intervention with cesarean section, to further reduce rates of stillbirth and neonatal asphyxia.

Reducing perinatal asphyxia on a population basis requires a health system in which every woman is screened for the conditions discussed above and is provided care for those conditions in a timely fashion. Since many of the conditions progress rapidly during labor, advanced planning for the treatment is often helpful. Regular obstetric drills for conditions like eclampsia, severe hemorrhage, and fetal distress will allow the staff to practice for these emergency conditions, and make sure that when presented with these conditions, there are adequate equipment, medications and trained staff available so that both the mother and fetus are delivered safely. Perinatal death audits that evaluate both cause of death and potential for preventability are crucial to reduce preventable mortality. Finally, availability of sufficient staff and appropriate equipment to handle obstetric emergencies is crucial. Most important is the recognition that in order to reduce neonatal death and disability from intrapartum asphyxia, prevention and treatment of obstetrical conditions in the mother is better than resuscitation of an already asphyxiated infant. This paper is important because it focuses on the intrapartum factors related to perinatal asphyxia, and starts to address preventable causes [6]. Further work should evaluate methods to reduce perinatal asphyxia of obstetric origin.

## Acknowledgments

*Funding:* RLG and EMM received support from the NICHD Global Network for Women's and Children's Health Research. RLG, EMM and BDk received support from the Bill and Melinda Gates Foundation's Mandate Project.

## References

1. Cousens S, Blencowe H, Stanton C, Chou D, Ahmed S, Steinhardt L, et al. National, regional, and worldwide estimates of stillbirth rates in 2009 with trends since 1995: a systematic analysis. *Lancet*. 2011; 377:1319–30. [PubMed: 21496917]
2. Lozano R, Wang H, Foreman KJ, Rajaratnam JK, Naghavi M, Marcus JR, et al. Progress towards millennium development goals 4 and 5 on maternal and child mortality: an updated systematic analysis. *Lancet*. 2011; 378:1139–65. [PubMed: 21937100]
3. Bhutta ZA, Darmstadt GL, Haws RA, Yakoob MY, Lawn JE. Delivering interventions to reduce the global burden of stillbirths: improving service supply and community demand. *BMC Pregnancy Childbirth*. 2009; 9 (Suppl 1):S7. [PubMed: 19426470]
4. Fauveau V. New indicator of quality of emergency obstetric and newborn care. *Lancet*. 2007; 370:1310. [PubMed: 17933644]
5. McClure EM, Goldenberg RL, Bann CM. Maternal mortality, stillbirth and measures of obstetric care in developing and developed countries. *Int J Gynaecol Obstet*. 2007; 96:139–46. [PubMed: 17274999]
6. Rani S, Chawla D, Huria A, Jain S. Risk factors for perinatal mortality due to asphyxia among emergency obstetric referrals in a tertiary hospital. *Indian Pediatr*. 2012; 49:191–4. [PubMed: 21719929]
7. Goldenberg RL, McClure EM, Bhutta ZA, Belizán JM, Reddy UM, Rubens CE, et al. Stillbirth: the vision for 2020. *Lancet*. 2011; 377:1798–805. [PubMed: 21496912]