



Improved Labor Care to Reduce Intrapartum-Related Newborn Deaths



The Problem of Neonatal Mortality

Each year, it is estimated that 3.6 million infants will die in the first four weeks of life (neonatal period). Mortality in the first 24 hours after birth counts for 25–45% of all neonatal deaths.ⁱ This is likely to be an underestimate of the true proportion of deaths in the first 24 hours due to the lack of disclosure of very early neonatal deaths and misclassification as stillbirths or neonatal deaths after the first day, as a result of inconsistencies in recording the 24-hour period after birth.ⁱⁱ These deaths are closely linked to the lack of adequate maternal and neonatal care during this critical time.

Newborn mortality and health are closely linked to maternal mortality and health. For mothers who die of an intrapartum-related cause, it is rare for the infant to survive.ⁱⁱⁱ Maternal morbidity is also closely linked to adverse fetal and neonatal outcomes.^{iv}

Three major causes of neonatal deaths (infections, complications of preterm birth and intrapartum-related neonatal deaths or “birth asphyxia”) account for more than 80% of all neonatal deaths globally.^v While significant progress has been made in reducing deaths from neonatal tetanus and there has been apparent progress toward reducing neonatal infections, limited, if any, progress has been made in reducing global deaths from preterm birth and for intrapartum-related neonatal deaths. These causes and the number of global deaths each year are (with the range of uncertainty in parentheses):

- Deaths caused by neonatal infection (excluding tetanus): 963,000 (680,000–1,500,000)
- Deaths caused by intrapartum events: 814,000 (560,000–1,000,000)
- Deaths caused by complications of preterm birth: 1,033,000 (720,000–1,222,000)^{vi}

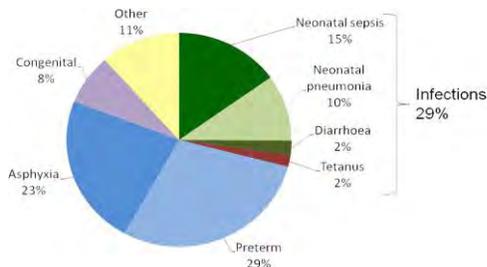


Figure 1. Causes of neonatal death for 3.6 million neonatal deaths in 192 countries based on cause-specific mortality data and multi-cause modeled estimates (Data source: Based on data from Child Health Epidemiology Reference Group and WHO in Black et al.)^{vii}

Infants born in the world’s least-developed countries have a very high risk of intrapartum-related death (previously called “birth asphyxia”)^{viii} and of intrapartum stillbirth. Stillbirths in low-resource areas are often not recorded and therefore are particularly difficult to measure. Interventions to reduce intrapartum-related newborn deaths require skilled attendance at birth, including emergency obstetric care.^{ix} Once an obstetric emergency, such as obstructed labor or hemorrhage, has resulted in severe intrapartum injury, the baby may be stillborn or have a high chance (30–50%) of dying on the first day of life.^x

Intrapartum Care Interventions That Reduce Newborn Deaths and Save the Lives of Newborns

Efforts to improve the care provided to mothers in labor and during childbirth have a **direct** effect on newborns—for prevention of infection, birth trauma and asphyxia. The prevention of intrapartum-related newborn deaths, the focus of this brief, can be influenced by the care a woman receives during labor.

Vigilance

The word “obstetrics” originates from the Latin *obstare*, i.e., “to stand by.” Monitoring of labor is the process of “vigilantly standing by” and observing the progress of labor and the condition of the mother and baby, and determining whether things are progressing normally or complications are developing. Intervening with inappropriate and sometimes unnecessary procedures, such as multiple vaginal exams, routine episiotomies and intravenous fluid administration, and keeping the mother from taking oral fluids and nourishment, can cause problems and complications for the mother and newborn. Furthermore, failure to carefully and continuously monitor the mother, baby and progress of labor, which allows problems to be detected early and appropriate management initiated promptly, can also result in excess morbidity and mortality for mother and baby. The earlier a problem is detected, the sooner it can be treated to avoid morbidity and mortality. The fetal heart rate should be monitored and recorded every 30 minutes during the active phase of labor and every five minutes during the second (expulsive) stage of labor while the woman is pushing. If monitoring reveals that there are fetal heart rate abnormalities, appropriate interventions should be taken, such as position change, administration of oxygen, brief maternal rest, or if persistent, assisted vaginal delivery or cesarean section.

Clinical Practices to Be Avoided to Reduce Intrapartum-Related Newborn Death

- Restriction of movement during labor
- Supine position during labor and birth
- Uninterrupted pushing during second (expulsive) stage
- Uncontrolled use of oxytocin

Clinical Practices to Be Promoted to Reduce Intrapartum-Related Newborn Death

- Skilled attendance at every birth
- Use of the partograph
- Companionship in labor and birth
- Rest between pushing in second stage
- Food and drink during labor
- Appropriate management of pre-eclampsia
- Appropriate use of cesarean section

Use of the Partograph

The partograph facilitates vigilant observation. The partograph is a decision-making tool that records, in graphic form, the condition of the mother and baby, as well as the progress of labor. The visual representation of all relevant data that are provided by this tool allows providers and supervisors to quickly identify conditions that require attention or action. Use of the partograph has been shown to reduce prolonged labor, the proportion of labors requiring augmentation and emergency cesarean sections, and intrapartum stillbirths and early newborn deaths in both multiparous and primiparous women.^{xi} Use of the partograph allows providers to know when it might be necessary to augment labor to increase the rate of dilatation, but also reduces the unnecessary use of oxytocin that can result in hyperstimulation and fetal hypoxia. Use of the partograph also helps ensure timely—when necessary—caesarean section, which is sometimes necessary for safe delivery of a hypoxic fetus. Use of the partograph also encourages increased vigilance and alerts the provider to signs of fetal or maternal distress at an early stage when remedial action can be effectively taken.

In addition to using the partograph, augmentation of labor, if necessary, should never be carried out if oxytocin cannot be carefully regulated. Labor should be augmented for purely medical reasons only. A patient's family may pressure providers to "speed up labor," but explanation that the labor is progressing normally and about the dangers of unnecessary augmentation may help allay concerns. In addition, oxytocin that is delivered intramuscularly or otherwise without control can result in tetanic contractions and newborn injury or death. If oxytocin is to be provided, it should be provided according to the protocols in the World Health Organization's *Managing Complications in Pregnancy and Childbirth* manual. Oxytocin should **never** be given in an uncontrolled or unmonitored manner.

Supportive Management during the First Stage of Labor

A simple intervention, such as providing emotional support in labor, can improve the birth outcome for both the mother and baby. Such support has been shown to reduce cesarean sections or assisted vaginal deliveries, need for medication and duration of labor—all of which increase the risk of newborn complications.^{xii}

Likewise, the use of nonpharmacologic measures for pain relief, such as a calm voice, relaxation techniques, encouragement and reassurance, and allowing change of position, has been shown to result in fewer operative deliveries, and to reduce the need for pharmacologic analgesia,^{xiii} some of which, e.g., narcotic analgesics, can depress newborn respiration.

Adequate hydration and nutrition during labor are essential to the well-being of the mother and baby and to the progress of labor. Fasting during labor can result in low blood sugar and ketosis, both of which can be prevented with proper intake.^{xiv} Hydration is also essential to maintaining intravascular volume and ensuring good uterine and placental perfusion, thus allowing maximal oxygen delivery to the fetus. Evidence shows that there is no significant difference in vomiting between women who eat while in labor and those who take only fluids.^{xv}

Management of Pre-Eclampsia/Eclampsia

While pre-eclampsia/eclampsia (PE/E) are diseases that affect women, they can have an impact on newborns as well. PE that is not recognized and not managed appropriately can result in severe hypertension and maternal seizures, both of which can reduce blood flow to the fetus. Management of severe PE or eclampsia may necessitate preterm delivery, with its resultant neonatal complications, or even delayed or unnecessary cesarean sections, which can also contribute to intrapartum-related newborn deaths.

Skilled Management of the Second Stage of Labor

The second stage of labor begins when the cervix is fully dilated. However, full dilation does not demand that the baby exit immediately. The normal physiology of the second stage of labor begins with a slowing of contractions as the baby begins to descend. When the baby has descended to a certain level, this causes pressure that stimulates the natural reflex that the woman feels to bear down; this is the time she should begin to push. The woman should push only with contractions and rest in between them. The strength of uterine contractions reduces the blood—and oxygen—that passes through the uterus or placenta. The brief rest between maternal pushes is essential to allow deep breathing to re-oxygenate the blood and flow of that oxygenated blood through the uterus and placenta to the baby. Remember, essentially no blood flows through the uterus to the placenta at the contraction peak. Therefore, rest between contractions is the only way to deliver oxygen to the fetus.

Monitoring of the fetal condition is essential during the second stage, a time of additional stress to the baby. Fetal heart rate should be monitored every five minutes in the second stage. As long as the fetal heart rate remains normal, there is no reason to rush the birth of the baby.

Position of the mother during the birth is important to help ensure adequate blood supply. Supine or lithotomy position causes compression on the aorta and vena cava, and reduces blood flow to the uterus. Therefore, the woman should be allowed to assume other positions, such as squatting, standing, or on her hands and knees during labor and birth.

Skilled Care for Healthy Mothers and Newborns

Appropriate care for the mother in labor also helps ensure a safe outcome for the baby. Skilled support during labor is necessary to help normal things remain normal and to rapidly detect and deal with complications during labor so that mothers and newborns have the best chance for a safe and healthy birth. Because an estimated 50% of newborns who need resuscitation have no known factors that would help predict this complication, every skilled birth attendant must also have skills in neonatal resuscitation and have access to a self-inflating bag and mask. The skilled birth attendant during labor and birth plays a key role in the prevention, early detection and management of problems that could cause intrapartum-related newborn death.

In situations where there is not a skilled birth attendant, there are important points for the family or birth attendant to remember. Labor and birth are usually normal events and avoiding intervention in the absence of complications is best.

- The mother should not be given any medications that would hurry the labor; these can cause serious complications for both mother and newborn
- Nothing should be inserted into the vagina; no herbs, fingers or instruments of any kind

To help babies initiate breathing all babies need the following:

- Gently wipe the baby's mouth and nose with a clean cloth, dry the baby with a clean dry cloth and rub the baby's back
- Put the baby skin-to-skin on the mother's chest so that the baby can breastfeed immediately.

The family or birth attendant present should watch for danger signs in both mother and baby and be ready to transfer if needed.

ⁱ Lawn JE, Cousens S and Zupan J. 2005. 4 million neonatal deaths: when? Where? Why? *Lancet* 365: 891–900.

ⁱⁱ Lawn JE et al. 2010. 3.6 million neonatal deaths—what is progressing and what is not? *Semin Perinatol* 34: 371–386.

ⁱⁱⁱ Ronsmans C et al. 2010. Effect of parent's death on child survival in rural Bangladesh: a cohort study. *Lancet* 375: 2024–2031.

^{iv} Lawn JE et al. 2009. Reducing intrapartum-related deaths and disability: can the health system deliver? *Int J Gynaecol Obstet* 107 Suppl 1: S123–40, S140–2.

^v Lawn JE et al. 2010.

^{vi} Lawn JE et al. 2010.

^{vii} Black RE et al. 2010. Global, regional, and national causes of child mortality in 2008: a systematic analysis. 2010. *Lancet* 375: 1969–1987.

^{viii} Lawn JE et al. Two million intrapartum-related stillbirths and neonatal deaths: where, why, and what can be done? *Int J Gynaecol Obstet* 107 Suppl 1: S5–18, S19.

^{ix} Darmstadt GL et al. 2005. Evidence-based, cost-effective interventions: how many newborn babies can we save? *Lancet* 365: 977–988.; Adam T et al. 2005. Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries. *BMJ* 331: 1107.

^x Lawn J, Shibuya K and Stein C. 2005. No cry at birth: global estimates of intrapartum stillbirths and intrapartum-related neonatal deaths. *Bull World Health Organ* 83(6): 409–417.

^{xi} World Health Organization (WHO). 1994. The WHO partograph in the management of labor. *Lancet* 34: 1399–1404.

^{xii} Brüggemann OM, Parpinelli MA and Osis MJ. 2005. Evidence on support during labor and birth: A literature review. *Cad Saude Publica* 21(5):1316–27.

^{xiii} Hodnett ED et al. 2011. Continuous support for women during childbirth. *Cochrane Database Syst Rev* Feb 16;2:CD003766.

^{xiv} Scrutton MJ et al. 1999. Eating in labour. A randomised controlled trial assessing the risks and benefits. *Anaesthesia* 54(4): 329–34.

^{xv} Parsons M, Bidewell J and Nagy S. 2006. Natural eating behavior in latent labor and its effect on outcomes in active labor. *J Midwifery Women's Health* 51(1): e1–6.