

CAUSES OF NEWBORN DEATH: COMPLICATIONS DURING CHILDBIRTH *

Birth is a time of great risk for death: an estimated 717,000 newborns die each year during birth, and an additional 1.2 million stillbirths result from birth-related complications. In addition, a significant proportion of the world's 287,000 annual maternal deaths occur during childbirth. Recent estimates indicate that birth-related complications for the baby (also known as “birth asphyxia”) represent 23% of newborn deaths around the world, making it one of the leading causes of newborn mortality. Emergencies during childbirth and poor fetal oxygenation commonly contribute to stillbirth and neonatal deaths, as well as to long-term neurologic disabilities, including mental impairment and cerebral palsy.

Identification and Management



A midwife practices newborn resuscitation as a follow up to the Helping Babies Breathe (HBB) training she received in Uganda.

Photo by Ian P. Hurley/Save the Children

Up to 10% of newborns require some assistance to begin breathing at birth, but fewer than 1% require advanced measures, such as the use of cardiac massage, intubation, and medications. Appropriate care through labor and at the time of birth with access to emergency obstetric care, essential and extra newborn care, and neonatal resuscitation are proven to be effective in preventing or managing intrapartum-related complications.¹

During labor, good monitoring of fetal status and timely action on indications of fetal distress as well as desisting from practices like poorly-monitored non-medically indicated labor augmentation or dangerous application of fundal pressure can prevent life-threatening asphyxia.² If asphyxia does occur, the first response includes an immediate newborn assessment along with drying and tactile stimulation for the baby.

Through this care, the majority of newborns will initiate and sustain breathing within the “golden minute” after birth. Within a minute of birth, a baby who is not breathing and does not respond to drying and stimulation should be assisted to breathe with a bag and mask.

Every skilled birth attendant should be able to perform interventions that prevent asphyxia and to resuscitate a non-breathing baby; however, the level of professional expertise among birth attendants in performing these interventions varies widely, even in large public hospitals in cities.³ The availability of resuscitation equipment, including suction and bag and mask devices, presents an additional challenge for combating asphyxia. There is a global effort to improve providers' resuscitation skills and ensure that health facilities are equipped to manage birth asphyxia in timely manner.⁴

¹ Lawn JE, et al. A Decade of Change for Newborn Survival, Policy and Programmes (2000-2010). Health Policy and Planning. 27 (Suppl. 3) 2012.

² Hofmeyr GJ, et al. Obstetric Care in Low-Resource Settings: What, Who, and How to Overcome Challenges to Scale Up?. International Journal of Gynecology and Obstetrics. 107: S21-S45. 2009.

³ Spector JM, Daga, S. World Health Organization. Preventing Those So-called Stillbirths. Bulletin of the World Health Organization, 86.4: 2008. <http://www.who.int/bulletin/volumes/86/4/07-049924/en/>

⁴ Coffey P, Kak L, Narayanan I, Bergeson L, Singhal N, Wall S, Johnson J, Schoen E. Case Study: Newborn Resuscitation Devices. United Nations Commission on Commodities for Women's and Children's Health. February 2012.

**Globally, 3 million newborns die each year, and 2.6 million babies are stillborn. Four out of five newborn deaths result from three preventable and treatable conditions: preterm birth; infections; and complications during childbirth, also known as birth asphyxia. For more information on each of these conditions, visit the Health Newborn Network (<http://www.healthnewbornnetwork.org>).*

In 2012 the World Health Organization published guidelines for basic newborn resuscitation to assist with immediate care after birth, positive-pressure ventilation, and termination of ventilation.⁵ These include:

1. In newly-born term or preterm babies who do not require positive-pressure ventilation, the cord should not be clamped earlier than one minute after birth.⁶
2. In neonates born through clear amniotic fluid who start breathing on their own after birth, suctioning of the mouth and nose should not be performed.
3. In the presence of meconium-stained amniotic fluid, intrapartum suctioning of the mouth and nose at the delivery of the head is not recommended.
4. In newly-born babies who do not start breathing despite thorough drying and additional stimulation, positive-pressure ventilation should be initiated within one minute after birth.
5. In newly-born term or preterm (>32 weeks gestation) babies requiring positive-pressure ventilation, ventilation should be initiated with air (i.e., not supplemental oxygen).
6. In newly-born babies requiring positive-pressure ventilation, ventilation should be provided using a self-inflating bag and mask.
7. In newly-born babies requiring positive-pressure ventilation, ventilation should be initiated using a facemask interface.
8. In newly-born babies requiring positive-pressure ventilation, adequacy of ventilation should be assessed by measurement of the heart rate after 60 seconds of ventilation with visible chest movements.
9. In newly-born babies who do not start breathing within one minute after birth, priority should be given to providing adequate ventilation rather than to chest compressions.
10. In newly-born babies with no detectable heart rate after 10 minutes of effective ventilation, resuscitation should be stopped.

Box 1. Improving Service Provider Skills

Helping Babies Breathe (HBB): HBB is a program to teach the essential skills of neonatal resuscitation to health workers in resource-limited areas. Developed by the American Academy of Pediatrics (AAP), HBB takes a competency-based, pair learning training approach and focuses on basic resuscitation skills, in keeping with the WHO recommendations stated above. In 2010, the U.S. Agency for International Development (USAID) in partnership with AAP, Save the Children, the Laerdal Foundation, and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) launched a Global Development Alliance (GDA) with the objective of improving resuscitation for asphyxiated babies by rolling out HBB globally. The GDA seeks not only to train service providers but to work with ministries of health and their implementing partners to provide functional resuscitation equipment for all health facilities where babies are delivered.

Essential Newborn Care Course (ENCC): The ENCC is a WHO training program that works to ensure that health workers have the skills and knowledge to provide appropriate care at the most vulnerable period in a baby's life. Health workers are taught to use the WHO publication *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice*. In particular, the course focuses on the sections concerned with newborn care, which provide up-to-date evidence-based information and management of babies with a range of needs in the initial newborn period.⁷



⁵ World Health Organization. Guidelines on Basic Newborn Resuscitation. 2012.

⁶ "Not earlier than one minute" should be understood as the lower limit supported by published evidence. WHO recommendations for the prevention of postpartum haemorrhage (Fawole B et al. Geneva, WHO, 2007) state that the cord should not be clamped earlier than is necessary for applying cord traction, which the Guidelines Development Group clarified would normally take around 3 minutes.

⁷ World Health Organization. Essential Newborn Care Course: Trainer's Guide. 2010.