



Standard Terminology for Fetal, Infant, and Perinatal Deaths

Wanda D. Barfield, MD, MPH, COMMITTEE ON FETUS AND NEWBORN

Accurately defining and reporting perinatal deaths (ie, fetal and infant deaths) is a critical first step in understanding the magnitude and causes of these important events. In addition to obstetric health care providers, neonatologists and pediatricians should have easy access to current and updated resources that clearly provide US definitions and reporting requirements for live births, fetal deaths, and infant deaths. Correct identification of these vital events will improve local, state, and national data so that these deaths can be better addressed and prevented.

abstract

INTRODUCTION

Perinatal mortality is the combination of fetal deaths and neonatal deaths. In the United States in 2013, the fetal mortality rate for gestations of at least 20 weeks (5.96 fetal deaths per 1000 live births and fetal deaths)¹ was similar to the infant mortality rate (5.98 infant deaths per 1000 live births).² Depending on the definition used, fetal mortality contributes to approximately 40% to 60% of perinatal mortality. Understanding the etiologies of these events and predicting risk begins with accurately defining cases; the collection and analysis of reliable statistical data are an essential part of in-depth investigations on local, state, and national levels.

Fetal and infant deaths occur within the clinical practice of several types of health care providers. Although obstetric practitioners report fetal deaths, certain situations can occur during a delivery in which viability or possibility of survival is unclear; the pediatrician or neonatologist may attend the delivery to assess the medical condition of the fetus or infant, assess pre-viable gestational age, provide care as indicated, and report a subsequent infant death, if it occurs. Incorrectly defining and reporting fetal deaths and early infant deaths may contribute to misclassification of these important events and result in inaccurate fetal and infant mortality rates.³ Within this context, the American Academy of Pediatrics provides definitions and reporting requirements of fetal death, live birth, and infant death to emphasize that neonatologists and pediatricians play an

This document is copyrighted and is property of the American Academy of Pediatrics and its Board of Directors. All authors have filed conflict of interest statements with the American Academy of Pediatrics. Any conflicts have been resolved through a process approved by the Board of Directors. The American Academy of Pediatrics has neither solicited nor accepted any commercial involvement in the development of the content of this publication.

The views expressed in this document are not necessarily those of the Centers for Disease Control and Prevention or the US Department of Health and Human Services.

Clinical reports from the American Academy of Pediatrics benefit from expertise and resources of liaisons and internal (AAP) and external reviewers. However, clinical reports from the American Academy of Pediatrics may not reflect the views of the liaisons or the organizations or government agencies that they represent.

The guidance in this report does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

All clinical reports from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

DOI: 10.1542/peds.2016-0551

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2016 by the American Academy of Pediatrics

To cite: Barfield WD and AAP COMMITTEE ON FETUS AND NEWBORN. Standard Terminology for Fetal, Infant, and Perinatal Deaths. *Pediatrics*. 2016;137(5):e20160551

important role in recording accurate and timely information surrounding these events. This role includes making the determination of the specific vital event during delivery, recording information surrounding the event on the appropriate certificate or report in compliance with state-specific requirements, and documenting information that is as complete and as accurate as possible, including the underlying cause of death, when known. Although guidance for these definitions is provided elsewhere,⁴⁻⁶ it may not be readily available to pediatricians in the delivery room.

Both the collection and use of information about fetal, infant, and perinatal deaths have been hampered by lack of understanding of differences in definitions, statistical tabulations, and reporting requirements among providers and state, national, and international bodies. Distinctions can and should be made between the definition of an event and the reporting requirements for the event. The definition indicates the meaning of a term (eg, live birth, fetal death). A reporting requirement is that part of the defined event for which reporting is mandatory.

DEFINITIONS

Challenges in consistent definitions of fetal and infant death mostly stem from the perception of viability, which should not change the definition of the event. In other words, an extremely preterm infant born at 16 weeks' gestation may be defined as a live birth but is not currently viable outside of the womb. On the basis of international standards set by the World Health Organization,⁷ the National Center for Health Statistics of the Centers for Disease Control and Prevention defines live birth, fetal death, infant death, and perinatal death as follows.⁴

Live Birth

A live birth is defined as the complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy, which, after such expulsion or extraction, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, regardless of whether the umbilical cord has been cut or the placenta is attached. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

Fetal Death

A fetus is defined from 8 weeks after conception until term while in the uterus. Fetal death is defined as death before the complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy that is not an induced termination of pregnancy. The death is indicated by the fact that, after such expulsion or extraction, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

For statistical purposes, fetal deaths are further subdivided as "early" (20–27 weeks' gestation) or "late" (≥ 28 weeks' gestation). The term "stillbirth" is also used to describe fetal deaths at 20 weeks' gestation or more. Stillbirth is not specifically divided into early and late gestations, but for international comparisons the World Health Organization defines stillbirth as at or after 28 weeks' gestation. Fetuses that die in utero before 20 weeks' gestation

are categorized specifically as miscarriages.

Infant Death

A live birth that results in death within the first year (<365 days) is defined as an infant death. Infant deaths are characterized as neonatal (<28 days) and further subdivided into early neonatal (<7 days), late neonatal (7–27 days), or postneonatal (28–364 days).

Perinatal Death

Perinatal deaths refer to a combination of fetal deaths and live births with only brief survival (days or weeks) and are grouped on the assumption that similar factors are associated with these losses. Perinatal death is not a reportable vital event, per se, but is used for statistical purposes. Three definitions of perinatal deaths are in use:

- Definition I includes infant deaths that occur at less than 7 days of age and fetal deaths with a stated or presumed period of gestation of 28 weeks or more.
- Definition II includes infant deaths that occur at less than 28 days of age and fetal deaths with a stated or presumed period of gestation of 20 weeks or more.
- Definition III includes infant deaths that occur at less than 7 days of age and fetal deaths with a stated or presumed gestation of 20 weeks or more.

From national and international perspectives, perinatal deaths have important implications for both public health and clinical interventions. However, the interpretations of these definitions vary globally on the basis of cultural perspectives, clinical definitions of viability, and availability of information. The National Center for Health Statistics currently classifies perinatal deaths according to the first 2 definitions. Definition I is used by the National Center for Health

TABLE 1 Reporting Requirements for Fetal Death According to State or Reporting Area, 2014

Criteria	State/Reporting Area
Gestational age criteria only	
All periods	Arkansas, Colorado, Georgia, Hawaii, New York, ^a Rhode Island, Virginia, Virgin Islands
≥16 weeks	Pennsylvania
≥20 weeks	Alabama, Alaska, California, Connecticut, Florida, Illinois, Indiana, Iowa, Maine, Maryland, ^b Minnesota, Nebraska, Nevada, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Texas, Utah, Vermont, ^c Washington, West Virginia, Wyoming
≥5 months	Puerto Rico
Both gestational age and birth weight criteria	
≥20 weeks or ≥350 g	Arizona, Idaho, Kentucky, Louisiana, Massachusetts, Mississippi, Missouri, New Hampshire, New Mexico, South Carolina, Tennessee, Wisconsin, Guam
≥20 weeks or ≥400 g	Michigan
≥20 weeks or ≥500 g	District of Columbia
Birth weight criteria only	
≥350 g	Delaware, ^d Kansas, Montana ^d
≥500 g	South Dakota

Data source: National Center for Health Statistics, National Vital Statistics Reports.

^a Includes New York city, which has separate reporting.

^b If gestational age is unknown, weight of ≥500 g.

^c If gestational age is unknown, weight of ≥400 g, ≥15 ounces.

^d If weight is unknown, ≥20 weeks' completed gestation.

Statistics and the World Health Organization to make international comparisons to account for variability in registering births and deaths between 20 and 27 weeks' gestation.⁸ However, definition II is more inclusive and hence is more appropriate for monitoring perinatal deaths throughout gestation, because the majority of fetal deaths occur before 28 weeks' gestation.

REPORTING REQUIREMENTS

In the United States, states and independent reporting areas (ie, New York City; Washington, DC; and the US territories) register the certificates of live birth, death, and fetal death. These certificates/reports include clinical information. Challenges in consistent reporting of fetal death, in particular, stem from the variation in reporting requirements among states.⁹ Recommended definitions and reporting requirements are issued through the Model State Vital Statistics Act and Regulations (the Model Law).^{10,11} The Model Law recommends fetal death reporting for deaths that occur at 350 g birth weight or more or, if the weight is

unknown, of 20 completed weeks' gestation or more. However, states have the authority to register these vital events and might not necessarily follow the Model Law, which results in differences in birth weight and gestational age criteria for reporting fetal deaths (Table 1). States also vary in the quality of the data reported, which include missing data.⁹

All live births, regardless of gestational age, are reported as vital record events. Infant deaths involve both the reporting of a live birth event and a death event using a certificate of live birth and a certificate of death, respectively. Information from the certificate of live birth, including demographic information, selected maternal risk factors, maternal labor and delivery information, and infant weight and gestational age, is linked to information on the infant death certificate to include cause-of-death information. The fetal death certificate or report, a single document, includes maternal demographic information, selected maternal risk factors, labor and delivery information, and information about the fetus to

include weight, gestational age, and cause of death. Accurate completion of these vital records is important for generating accurate data to determine the magnitude and causes of fetal, infant, and perinatal deaths.

PRACTICAL CONSIDERATIONS

A flow diagram for the determination of appropriate reporting of perinatal deaths was developed by the National Association for Public Health Statistics and Information Systems (Fig 1). The diagram delineates the sequence of reporting and can be used in delivery rooms to appropriately report perinatal events. Induced termination of pregnancy is included in the flow diagram but is beyond the scope of this report.

In the circumstance of delivery events in which the fetus is of uncertain viability, if the infant is determined to be a live birth, the event is reported regardless of birth weight, length of gestation, survival time, or other clinical information (eg, Apgar scores). If fetal death is determined, the event is reported by the obstetric health care provider on the basis of state criteria, including

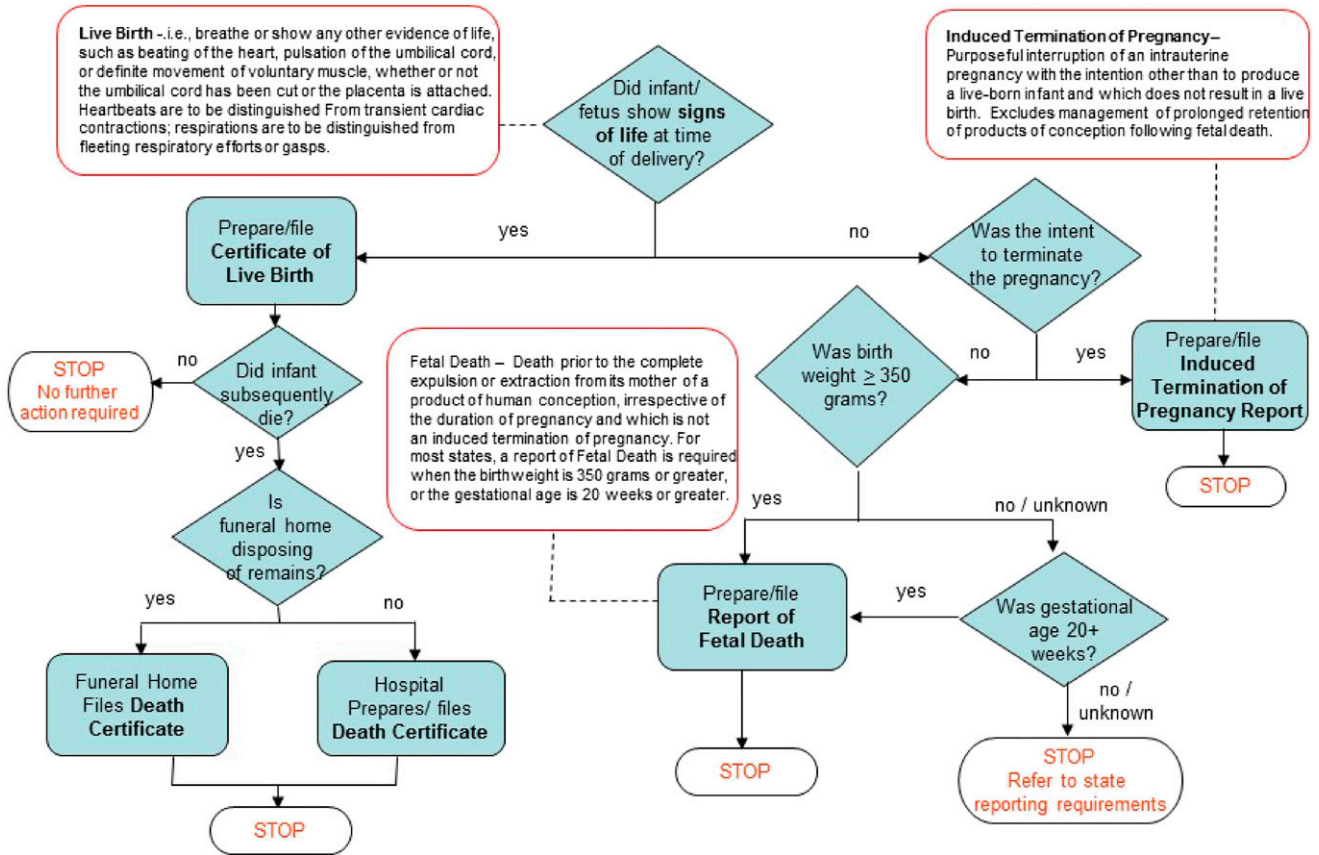


FIGURE 1

Hospital guidelines for reporting live births, infant deaths, fetal deaths, and induced terminations of pregnancy. (Adapted with permission from the National Association for Public Health Statistics and Information Systems; www.naphsis.org [available on request].)

both birth weight and gestational age. The careful use of accurate definitions is of utmost importance in medical record documentation of these events. Because there are no signs of life at delivery, fetal deaths are not assigned Apgar scores and are usually not admitted to the nursery or NICU. Postmortem examination of the fetus or infant and placenta may provide important information as to the cause of death; however, the actual evaluation and management of fetal and infant death are beyond the scope of this guidance and have been reported elsewhere.¹²

In summary, the accurate and timely reporting of live birth and fetal and infant death is the cornerstone of perinatal mortality data. Because reducing fetal and infant mortality is among the nation's health goals, accurate definitions of these events

are essential for understanding causes and researching potential solutions.

SUGGESTIONS

1. Vital events are best defined and reported as follows:
 - Live birth: The complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy, which, after such expulsion or extraction, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, regardless of whether the umbilical cord has been cut or the placenta is attached. Heartbeats are

to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

- Fetal death: Death before the complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy that is not an induced termination of pregnancy. The death is indicated by the fact that, after such expulsion or extraction, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be

distinguished from fleeting respiratory efforts or gasps.

- Infant death: A live birth that results in death within the first year (<365 days).
2. Obtain accurate information on state law to file the fetal death certificate/report according to state requirements.
3. Complete reporting of live births, infant deaths, and fetal deaths (in support of obstetrician reporters) with the most accurate information possible to include pertinent demographic information, maternal medical history, and fetal or infant diagnoses.

LEAD AUTHOR

Wanda Denise Barfield, MD, MPH, FAAP
wjb5@cdc.gov

COMMITTEE ON FETUS AND NEWBORN, 2014–2015

Kristi Watterberg, MD, FAAP, Chairperson
William Benitz, MD, FAAP
James Cummings, MD, FAAP
Eric Eichenwald, MD, FAAP
Brenda Poindexter, MD, FAAP
Dan L. Stewart, MD, FAAP
Susan W. Aucott, MD, FAAP
Karen M. Puopolo, MD, FAAP
Jay P. Goldsmith, MD, FAAP

LIAISONS

Kasper S. Wang, MD, FAAP – *AAP Section on Surgery*
Thierry Lacaze, MD – *Canadian Pediatric Society*
Maria Ann Mascola, MD – *American College of Obstetricians and Gynecologists*

Tonse N.K. Raju, MD, FAAP – *National Institutes of Health*
Wanda D. Barfield, MD, MPH, FAAP – *Centers for Disease Control and Prevention*
Erin Keels, MS, APRN, NNP-BC – *National Association of Neonatal Nurses*

STAFF

Jim Couto, MA

REFERENCES

1. MacDorman MF, Gregory ECW. Fetal and perinatal mortality: United States, 2013. *Natl Vital Stat Rep*. 2015;64(8):1–8
2. Centers for Disease Control and Prevention. Deaths: final data for 2013. Available at: www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_nvsvr64_02.pdf. Accessed July 2015
3. MacDorman MF, Martin JA, Mathews TJ, Hoyert DL, Ventura SJ. Explaining the 2001-02 infant mortality increase: data from the linked birth/infant death data set. *Natl Vital Stat Rep*. 2005;53(12):1–22
4. Centers for Disease Control and Prevention. State definitions and reporting requirements for live births, fetal deaths, and induced terminations of pregnancy. Hyattsville, MD: National Center for Health Statistics; 1997. Available at: www.cdc.gov/nchs/data/misc/itop97.pdf. Accessed July 7, 2015
5. American Academy of Pediatrics; American College of Obstetrics and Gynecology. Appendix F: standard terminology for reporting reproductive health statistics. In: *Guidelines for Perinatal Care*. 7th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:497–512
6. Committee on Obstetric Practice. ACOG Committee opinion: perinatal and infant mortality statistics. Number 167, December 1995. *Int J Gynaecol Obstet*. 1996;53(1):86–88
7. World Health Organization. *International Statistical Classification of Diseases and Related Health Problems*, Tenth Revision. Vol 2. Geneva, Switzerland: World Health Organization; 2006
8. World Health Organization. *Neonatal and Perinatal Mortality: Country, Regional and Global Estimates*. Geneva, Switzerland: World Health Organization; 2006
9. Martin JA, Hoyert DL. The National Fetal Death File. *Semin Perinatol*. 2002;26(1):3–11
10. Centers for Disease Control and Prevention; National Center for Health Statistics. Model State Vital Statistics Act and Regulations: 1992 revision. Hyattsville, MD: National Center for Health Statistics; 1994. Available at: www.cdc.gov/nchs/data/misc/mvsact92b.pdf. Accessed July 7, 2015
11. Centers for Disease Control and Prevention; National Center for Health Statistics. 2003 Revisions of the U.S. Standard Certificates of Live Birth and Death and the Fetal Death Report. Hyattsville, MD: National Center for Health Statistics; 2014. Available at: www.cdc.gov/nchs/nvss/vital_certificate_revisions.htm. Accessed July 7, 2015
12. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 102: management of stillbirth. *Obstet Gynecol*. 2009;113(3):748–761

Standard Terminology for Fetal, Infant, and Perinatal Deaths
Wanda D. Barfield and COMMITTEE ON FETUS AND NEWBORN
Pediatrics 2016;137;

DOI: 10.1542/peds.2016-0551 originally published online April 18, 2016;

Updated Information & Services

including high resolution figures, can be found at:
<http://pediatrics.aappublications.org/content/137/5/e20160551>

References

This article cites 5 articles, 0 of which you can access for free at:
<http://pediatrics.aappublications.org/content/137/5/e20160551#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):

Current Policy

http://www.aappublications.org/cgi/collection/current_policy

Committee on Fetus & Newborn

http://www.aappublications.org/cgi/collection/committee_on_fetus_newborn

Fetus/Newborn Infant

http://www.aappublications.org/cgi/collection/fetus:newborn_infant_sub

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:
<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Standard Terminology for Fetal, Infant, and Perinatal Deaths

Wanda D. Barfield and COMMITTEE ON FETUS AND NEWBORN

Pediatrics 2016;137;

DOI: 10.1542/peds.2016-0551 originally published online April 18, 2016;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/137/5/e20160551>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2016 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

