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Guidance for the Clinician in Rendering Pediatric Care

Clinical Reports—Standard Terminology for Fetal, Infant, and Perinatal Deaths

CAPT Wanda Denise Barfield, MD, MPH, and the COMMITTEE ON FETUS AND NEWBORN

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fetal mortality

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abstract

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 know the current US definitions and reporting requirements for live births, fetal deaths, and infant deaths. Correct identification of these vital events will improve our local, state, and national data so that these deaths can be better addressed and reduced. *Pediatrics* 2011;128:177–181

INTRODUCTION

Perinatal mortality comprises the combination of fetal deaths and neonatal deaths. In the United States in 2005, the fetal mortality rate for gestations of at least 20 weeks (6.2 fetal deaths per 1000 live births and fetal deaths)[1] was similar to the infant mortality rate (6.9 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 previable 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 in an effort to emphasize that neonatologists and pediatricians play an 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 ensuring completeness and accuracy of the information, 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

A fetus is defined from 8 weeks after conception until term while in the uterus. An infant is live born and younger than 365 days of age. Challenges in consistent definitions of fetal and infant death mostly stem from 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

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.

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. 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 further subdivided as early neonatal (<7 days), late neonatal (7–27 days), neonatal (<28 days), or postneonatal (28–364 days).

Perinatal Death

Perinatal death is not a reportable vital event, per se, but is used for statistical purposes. Perinatal deaths refer to 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. Three definitions of perinatal deaths are in use:

- Perinatal death, 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.
- Perinatal death, 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.
- Perinatal death, 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 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

TABLE 1 Reporting Requirements for Fetal Death According to State or Reporting Area, 2005

Criteria	State/Reporting Area
Gestational age criteria only	
All periods	Arkansas, Colorado, Georgia, Hawaii, New York,[a] Rhode Island, Virginia, Virgin Islands
≥16 wk	Pennsylvania
≥20 wk	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 mo	Puerto Rico
Both gestational age and birth weight criteria	
≥20 wk or ≥350 g	Arizona, Idaho, Kentucky, Louisiana, Massachusetts, Mississippi, Missouri, New Hampshire, South Carolina, Wisconsin, Guam
≥20 wk or ≥400 g	Michigan
≥20 wk or ≥500 g	District of Columbia
Birth weight criteria only	
≥350 g	Delaware,[d] Kansas, Montana[d]
≥500 g	New Mexico, South Dakota, Tennessee[e]

[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 oz.
[d] If weight is unknown, ≥20 weeks' completed gestation.
[e] If weight is unknown, ≥22 completed weeks' gestation.
Data source: National Center for Health Statistics, National Vital Statistics Reports.

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 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 includes 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, are 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 should be reported by the obstetric health care provider on the basis of state criteria and should include both birth weight and gestational age. The appropriate use of these definitions should be reflected in the medical record. Fetal deaths should not be assigned Apgar scores or be admitted to the nursery or NICU. Although the actual evaluation and management of fetal and infant death is beyond the scope of this guidance and has been reported elsewhere,[12] a postmortem examination of the fetus or infant and placenta should be conducted whenever possible.

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.

RECOMMENDATIONS

1. Physicians should accurately define and report vital events 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

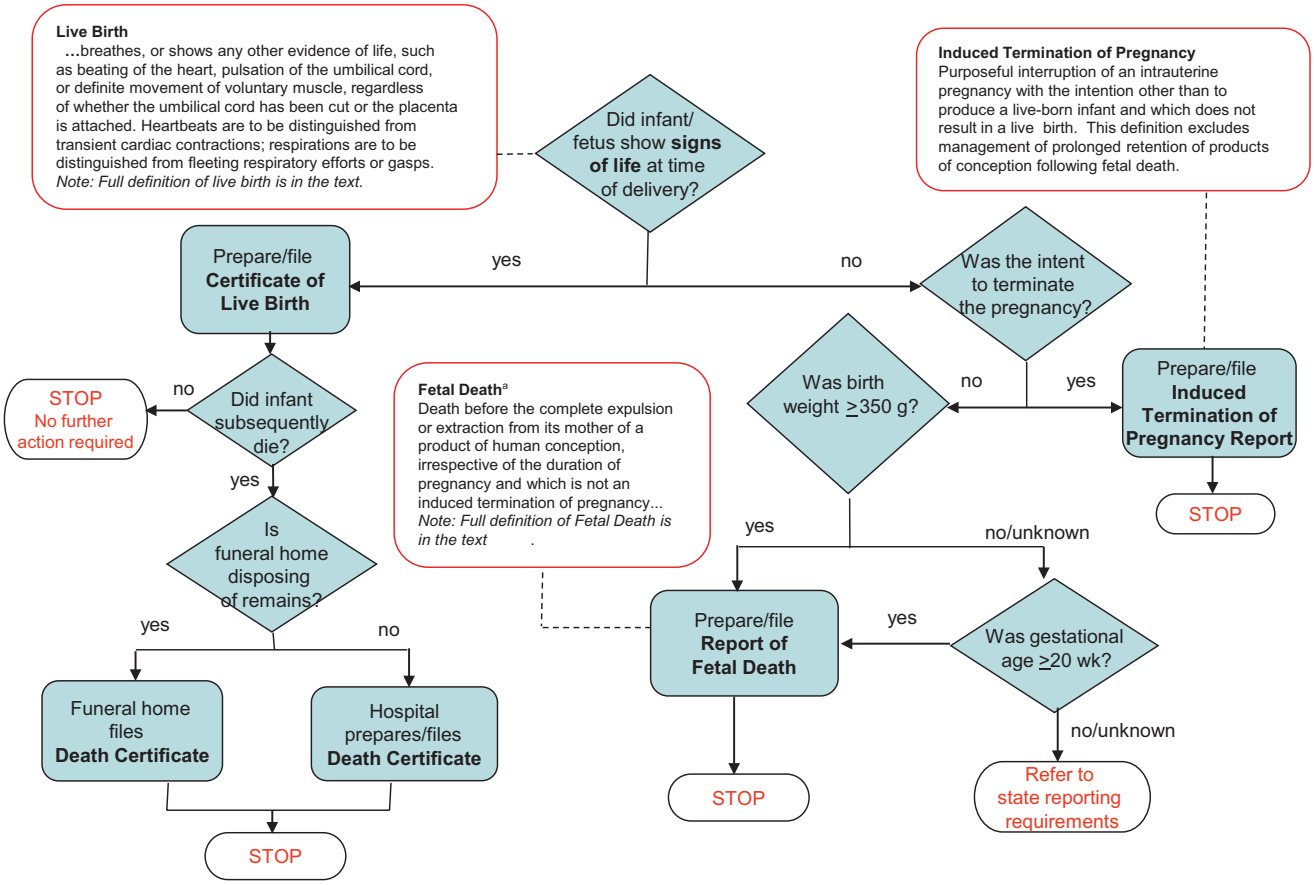

FIGURE 1

Hospital guidelines for reporting live births, infant deaths, fetal deaths, and induced terminations of pregnancy. [a] For most states, a report of fetal death is required when the birth weight is 350 g or greater or the gestational age is 20 weeks or older. Adapted with permission from the National Association for Public Health Statistics and Information Systems (www.naphsis.org).

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. Physicians should obtain accurate information on state law to ensure that the fetal death certificate/report is filed according to state requirements.
3. Physicians should obtain accurate information to complete reporting of live births, infant deaths, and fetal deaths (in support of obstetrician reporters) to include pertinent demographic information, maternal medical history, and fetal or infant diagnoses. An autopsy of the fetus or infant and examination of the placenta should be performed when possible.

LEAD AUTHOR

CAPT Wanda Denise Barfield, MD, MPH

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STAFF

Jim Couto, MA

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