



World Health
Organization

Indicator Sheet

STILLBIRTH RATE

MoNITOR  R

The MoNITOR logo icon is a green circle containing a white heartbeat line and a heart symbol.

CONCEPT AND DEFINITION

Concept

Stillbirth is one of the most common adverse pregnancy outcomes worldwide (1). A stillbirth or fetal death is defined as a baby who was born with no signs of life (e.g. did not cry, move, breathe, or have a heartbeat) either before (antepartum) or during (intrapartum) delivery (2). For international comparison, WHO defines a stillbirth or fetal death, according to the International Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) (2), as a death of a fetus with a birthweight of ≥ 1000 grams (g) or a gestational age of ≥ 28 weeks or a body length of ≥ 35 centimetres (cm).

Stillbirth rates in many settings reflect the quality of antenatal care and the timeliness and quality of intrapartum monitoring and care. The proportion of babies that die in intrapartum is therefore a very important indicator, enabling health personnel to take the most appropriate measures to prevent such deaths. Where women receive good care during childbirth, intrapartum deaths represent less than 10% of stillbirths due to unexpected severe complications (1). While national and international attention, statistics and interventions focus on live births, there is very little research, programmatic or policy attention on stillbirths. Better access to appropriate obstetric care, especially during labour, should reduce stillbirth rates dramatically.

Definition

The number of fetuses born per year with no sign of life and born with birthweight of 1000 g, or after 28 weeks' gestation, or 35 cm or more body length is expressed as a rate per 1000 births (live and stillbirths) (2).

Unit of measurement: Rate

Level of indicator use: (a) Population-based global, national and subnational (first or second administrative level); and (b) facility-based at national or subnational level (first or second administrative level)

Monitoring and evaluation framework: Impact

Domain: Mortality

Continuum of care: Antenatal and intrapartum

MEASUREMENT GUIDANCE

Data sources

The three main data sources for this indicator are:

- a. Civil registration and vital statistics (CRVS) systems
- b. Routinely collected administrative data
- c. Population-based household surveys.

Civil registration and vital statistics systems

A well-functioning and integrated national or subnational CRVS system will universally register and certify vital events, including live births, stillbirths and deaths that occur in the country or administrative area. Birth and death certificates are issued as part of the CRVS system, allowing the compilation, analysis and dissemination of information through vital statistics agencies, including population characteristics (e.g. sex, date of birth or death, place of birth or death, place of usual residence) and cause-of-death information. Some CRVS systems will also register and certify other important vital events within the population, such as adoptions, marriages and divorces (3).

Data from CRVS are the preferred data source for this indicator when the system freely and universally records vital events and data are recorded in a systematic manner that ensures high data quality for both the public and private health sectors and regardless of location of birth (e.g. health facility or community-based births).

Key source of data: The main source of data for this indicator involves several steps and varies based on the policies and procedures of the national or subnational CRVS or other routine system within health facilities and/or within communities. Declaration of the stillbirth events are obtained through: (a) forms completed by health personnel at health facilities, or (b) community-based sources, including registration forms submitted directly by the parents of the stillbirth to civil registrars. Either paper or electronic forms containing this information are then submitted to the relevant civil authorities and vital statistics agencies, which have the responsibility to officially record the birth event and birth characteristics, such as name, date and place of birth, nationality and names of the mother and/or father. At the national or subnational level, the civil authority and vital statistics agency issues birth certificates to formalize the birth registration, regardless of birth outcome (live or stillbirth). National or subnational civil authorities and vital statistics agencies are responsible for reporting of this indicator.

Indicator definition and calculation: The indicator is calculated as the number of stillbirths per 1000 births (live and stillbirths) during a specified time period.

Numerator: Number of fetuses born per year with no sign of life and born with birthweight of ≥ 1000 g, or ≥ 28 weeks' gestation, or ≥ 35 cm body length during a specified time period.

Denominator: Total number of births (per 1000) in a specified time period.

To compute the rate per 1000 births, the numerator is divided by the denominator and multiplied by 1000. The denominator should include both live and stillbirths, including babies born live and who have later died (i.e. neonatal death). The definition of stillbirth may vary depending on definitions within the health facility and/or national or subnational vital statistics offices. To align with the global indicator, a stillbirth (or fetal death) is defined as a baby born with no signs of life after a given threshold. For international comparison, WHO defines stillbirth as birthweight of ≥ 1000 g; if the birthweight is not available, a gestational age of ≥ 28 weeks or a length of ≥ 35 cm (ICD-10) is used (2).

Frequency of measurement: Within CRVS, this indicator is generally monitored at a national or subnational level on an annual basis. The data can be compiled and aggregated subnationally to provide national-level data.

Disaggregation: By timing/type of fetal death or stillbirth (antepartum or intrapartum; fresh¹ or macerated²) (3), gestational age in weeks and days, birthweight, sex, place of birth, place of residence (e.g. urban, rural), and type of reporting source (e.g. health facility, community).

Missing values: Missing values are usually not known. To ascertain missing data, estimates of the total number of births in a country or administrative area can be compared with the absolute number of births in the same period.

Routinely collected administrative data

Data from routinely collected and compiled administrative data sources will provide information as recorded in medical charts/records or registers and are entered into national and/or subnational health management information systems (HMIS).

Data from health information systems may collect information on stillbirths among all births in a health facility. Routinely collected

¹ An intrapartum fetal death (stillbirth – fresh) refers to a baby that has died after the onset of labour and before birth. Fresh stillbirths do not show any signs of maceration (https://www.who.int/healthinfo/FacilityAnalysisGuidance_RMNCAH.pdf).

² An antepartum fetal death (stillbirth – macerated) refers to a fetus that has suffered an intrauterine death after the 28th week of gestation and before labour (https://www.who.int/healthinfo/FacilityAnalysisGuidance_RMNCAH.pdf).

administrative data and health facility statistics are the preferred data source in settings without an established CRVS system and when there is a high utilization of health facility services and data are recorded in a manner that ensures good data quality for both the public and private health sectors. The compiled data in the national HMIS or District Health Information System (DHIS2) should include data from both public and private health sectors, especially when the private sector is a substantial source of service provision to the population. In settings where utilization of health facilities is not high (e.g. settings with a high prevalence of births occurring at home), data may suffer from incompleteness if information about births occurring outside facilities is not captured. In addition, there are often challenges in accurately measuring the numerator and the denominator when routine HMIS data are used to measure this indicator.

Key source of data: Administrative data sources include health facility and health services data abstracted from obstetric and neonatal medical records, including health services registers. Relevant information is recorded about the fetal/newborn status at the time of delivery, including live birth or stillbirth (fetal death antepartum or intrapartum) for all newborns delivered at health facilities on paper forms completed by health personnel and/or through an electronic medical record. Data from paper or electronic sources are ideally entered or abstracted into a database or registry and are compiled and analysed within the national and/or subnational HMIS. The Ministry of Health (MoH) and/or National Statistical Offices (NSO) are usually responsible for the reporting of this indicator.

Indicator and calculation: The indicator is calculated as the number of stillbirths per 1000 births (live and stillbirths) in health facilities during a specified time period.

Numerator: Number of fetuses and infants born per year with no sign of life and born with birthweight of ≥ 1000 g, or ≥ 28 weeks' gestation, or ≥ 35 cm body length in health facilities during a specified time period (2).

Denominator: Total number of births (live and stillbirth) in health facilities³ during a specified time period.

To compute the rate per 1000 births, the numerator is divided by the denominator and multiplied by 1000. The definition of stillbirth may vary depending on definitions within the health facility and/or national or subnational vital statistics offices. To align with the global indicator,

³ In most countries, HMIS captures information on births within health facilities. However, in contexts where the HMIS includes both health facility and community birth registration, the denominator should include births registered within the geographic jurisdiction or catchment area of the health facility.

a stillbirth (or fetal death) is defined as a baby born with no signs of life after a given threshold. For international comparison, WHO defines stillbirth as birthweight of ≥ 1000 g; if the birthweight is not available, a gestational age of ≥ 28 weeks or a length of ≥ 35 cm (ICD-10) is used (2).

Frequency of measurement: The indicator can be calculated on an annual basis or may be tracked on a more frequent and ongoing basis (e.g. monthly, quarterly), depending on facility, subnational and national processes for data entry, compilation and analysis. As a guide, the recommended frequency of measurement based on reporting level is outlined below:

- *Facility level:* Monthly, quarterly, or as needed based on the country and/or facility need
- *Subnational (first and second administrative) level:* Monthly or quarterly
- *National level:* Annually (data can be aggregated to provide national-level data).

Disaggregation: By timing/type of fetal death or stillbirth (antepartum or intrapartum; fresh or macerated) (4), gestational age in weeks and days, birthweight, sex, level of facility, and location of facility (e.g. urban, rural).

Missing values: Missing values or stillbirths that occur outside of health facilities are usually not known or not reported.

Population-based household surveys

The main source of data for this indicator has been through population-based household surveys collected through nationally or subnationally representative and structured questionnaires, such as:

- Demographic Health Surveys (DHS) (5)
- Multiple Indicator Cluster Surveys (MICS) (6)
- Reproductive Health Surveys (RHS)
- Other household surveys with a similar methodological design.

Population-based household survey data are the preferred data source in settings where utilization of health facility services is not very high (e.g. settings with a high prevalence of deliveries occurring at home) or where private health sector data are excluded from routinely collected administrative data sources.

Key source of data: Eligible women of reproductive age (15–49 years) are identified in the household survey for inclusion and interviewing using an individual women’s questionnaire. Women are considered eligible for survey interview if they are either usual residents or visitors of the household who stayed there the night before the interview.

In the DHS-7 Women’s Questionnaire (5), all eligible and interviewed women between 15 and 49 years old are asked: *“Have you ever had a pregnancy that miscarried, was aborted, or ended in a stillbirth?”* If the woman responded “YES” to this question, she is then asked: *“When did the last such pregnancy end?”* The interviewer then asks for the month and year when the pregnancy ended.

For women who reported having a “pregnancy that miscarried, was aborted, or ended in a stillbirth” within five years prior to the survey interview date, further questions are asked for this pregnancy, as follows:

1. *“In what month and year did the preceding such pregnancy end?”*
2. *“How many months pregnant were you when that pregnancy ended?”*
3. *“Since [5 years before survey interview], have you had any other pregnancies that did not result in a live birth?”*

If the woman responded “YES” to question three above, indicating that she has had other pregnancies that did not result in a live birth, she is then asked questions 1–3 above for each preceding pregnancy that occurred within the five years before the survey interview, until there are no more additional pregnancies identified that did not end in a live birth within that time period.

Women are then asked *“Did you have any miscarriages, abortions, or stillbirths that ended before (YEAR)?”*; where “YEAR” refers to pregnancies that ended more than five years prior to the survey interview. If a woman indicates that she had a miscarriage, abortion, or stillbirth more than five years ago, she is asked *“When did the last such pregnancy that terminated before (YEAR) end?”* where “YEAR” refers to the year more than five years prior to the survey interview.

The MoH and NSO typically conduct household surveys and compile, analyse and report the results for this indicator in collaboration with the survey programme (e.g. DHS or other survey) and funding agency.

Indicator definition and calculation: Individual women of reproductive age (15–49 years old) are asked about the number of pregnancy losses during or after the seventh month of pregnancy for the five years preceding the interview. DHS follows WHO’s recommendation of reporting of stillbirths of 28 weeks or more gestation age for international comparison. However, in the DHS, duration of pregnancy is only recorded in months, and seven months may mean pregnancy duration is anywhere from 25 to 31 weeks of gestation. The definition is as follows:

The number of stillbirths⁴ (pregnancies that lasted seven or more months and terminated in a fetal death) per 1000 births in the five years prior to survey completion. The indicator consists of the following numerator and denominator:

Numerator: The number of pregnancies that lasted seven or more months and terminated in a fetal death in the five years prior to survey completion.

Denominator: Total number of birth (live births and stillbirth) in the five years prior to survey completion.

To compute the rate per 1000 births, the numerator is divided by the denominator and multiplied by 1000.

Frequency of measurement: Household surveys are typically conducted every 3–5 years.

Disaggregation at population level: Place of delivery (private or public health facility, community), place of residence (e.g. urban, rural), subnational administrative units (e.g. districts, provinces, regions), socioeconomic status (e.g. education level, household wealth quintile), age of woman at the time of interview, sex of birth, births attended by skilled health personnel, total number of antenatal care (ANC) visits and timing of first ANC visit.

Missing values: Missing values are not allowed for any of the variables that make up the rate.

⁴ The number of stillbirths is estimated from the contraceptive calendar. See the contraceptive calendar tutorial at: <https://www.dhsprogram.com/data/Calendar-Tutorial/index.cfm>.

INTERPRETATION AND USE

Interpretation

A high stillbirth rate may reflect inadequacies in antenatal and intrapartum care, and can be an indication of the quality and coverage of essential, referral and emergency care for women during pregnancy and childbirth. However, stillbirths are poorly captured and more likely not to be accurately accounted for. The use of standard definitions for stillbirth and accurate and timely classification of these deaths is critical for case ascertainment and global comparability. The WHO application of the ICD-10 to deaths during the perinatal period (ICD-PM) provides a framework for the consistent collection, analysis and interpretation of stillbirths (7).

Common challenges

Under-reporting: The number of stillbirths continues to be high and there is a lack of usable data in countries and regions in which most stillbirths occur, with under-reporting being a major challenge (8).

Inconsistent definitions: The different criteria used to define stillbirth remain an issue globally (9). Stillbirths are challenging to measure and data are often sparse and suffer from inconsistent definitions. However, for international comparison, WHO uses the ICD-10 definitions of late fetal deaths (1). WHO recommends gestational age threshold as the preferred parameter, because it is a better predictor of viability than birthweight. Most births in low-income countries occur at home, so birthweight is often unknown, and even with facility deliveries, stillborn babies are rarely weighed. This makes gestational age the most reliable criteria by which determination of stillbirths can be based upon (10).

Although the ICD-10 definition of stillbirth encompasses both birthweight and gestational age thresholds, they do not give equivalent results. This problem is compounded by the frequent occurrence of fetal growth restriction, associated with an adverse intrauterine environment before fetal death; hence, a birthweight-based cutoff will give a lower stillbirth rate than one based on gestational age. In many low- and middle-income countries, gestational age is mainly based on the last menstrual period, which women may not remember or may not have any records to rely on (11). There is further variation in definitions, especially in high-income countries. For example, in the United States of America (12), Australia and New Zealand (13, 14) data are collected from 20 weeks of gestation.

Self-report and recall bias: In surveys, which are the main source of data for low- and middle-income countries, stillbirths are documented based on self-report from mothers and is subject to recall and misclassification bias. Accuracy of recall, including age at death, may deteriorate with time, as in all surveys, and is also related to the skill and cultural sensitivity of the person carrying out the interview (10).

Lack of reporting requirements: Absence of global goals and reporting mechanisms continue to restrict the visibility of stillbirth rates, especially in countries with the greatest disease burden. This is magnified by the fact that the legal requirements for registration of fetal deaths vary between and within countries.

Civil registration and vital statistics systems

Collection of stillbirths that occur either in health facilities or within communities should be part of a well-functioning national and/or subnational CRVS system. However, in many countries worldwide, CRVS systems are either non-existent and/or the complete coverage, accuracy and timeliness of civil registration systems is a major issue. In order to assess the completeness of the CRVS system, evaluations should be conducted to ascertain the quality of the system, as recommended by the United Nation's revised Principles and Recommendations for a Vital Statistics System (3).

It is common for births to be undeclared and unregistered, particularly for stillbirths and live birth registrations for neonatal deaths occurring shortly after birth. This may be due to lack of a legal framework within civil authorities or vital statistics agencies requiring registration for all births, regardless of the outcome. Even in countries with functional CRVS systems and legal frameworks in place, missing or unregistered births still occur due to health professionals and/or parents not knowing about the requirement to register stillbirths, and in the instance of neonatal death, the need to register both the live birth in addition to the death.

For data from countries with a CRVS system and good coverage, data meeting definition criteria of ≥ 1000 g or 28 completed weeks of gestation are taken directly from CRVS without adjustment. For countries with limited data, the stillbirth rate should be estimated using statistical modelling (8).

Data collected from administrative and other routine data systems

Administrative data may suffer from poor quality such as irregularities in report generation, data duplication and inconsistencies (15). Reporting challenges exist at the facility level given data quality issues, including incomplete, inaccurate and lack of timely data due to insufficient capacity in the health system or inadequate system design.

Many HMIS databases or registries are event-based and the definition of a stillbirth varies by country and context, such as differences in inclusion for gestational age (e.g. 20–28 weeks) and birthweight (e.g. ≥ 500 grams). These differences in definitions compromise the ability to compare data between countries.

Administrative data should be interpreted with caution in settings where data quality is poor and the percentage of births at public and private sector health facilities is low, or where data from the private health sector are not compiled within the HMIS reporting.

In settings where routine HMIS data lack information on pregnancies and/or births or deliveries that occur outside the public sector – for

example, in homes, in the community, or in private sector facilities – the total number of births in the HMIS should not serve to estimate the denominator for this indicator. Where data on the total numbers of live births for the entire population for the denominator are unavailable, evaluators can calculate total estimated live births using census data for the total population and crude birth rates in a specified area (total expected live births = estimated population x the total crude birth rate).

Data collected through household surveys

Women may not be able to accurately recall details around childbirth when data are collected through household surveys (16). There is also a time lag as the recall period is for all pregnancies up to five years before the survey data were collected.

The systematic recording of live births, stillbirths and deaths in many countries remains a serious challenge. In the absence of reliable CRVS systems or administrative data, household surveys have recently become the source of data to monitor levels and trends of stillbirths. In many low- and middle-income countries, such surveys represent the sole source of this information. However, in many cultures and countries in the world, the appropriateness of asking about stillborn infants is very sensitive, and accuracy of reporting these events in household surveys is compromised due to difficulty in disclosure and also the complexity of probing to be able to properly identify the difference between a live birth, stillbirth (fetal death) and neonatal death.

Validation Studies

Technical work to improve the specificity of this indicator has been conducted via the following:

Publications

Blencowe H, Cousens S, Bianchi Jassir F, Say L, Chou D, Mathers C, et al. National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis. *Lancet Glob Health*. 2016;4(2):e98–108 ([https://doi.org/10.1016/S2214-109X\(15\)00275-2](https://doi.org/10.1016/S2214-109X(15)00275-2), accessed 23 October 2020).

Lawn JE, Blencowe H, Pattinson R, Cousens S, Kumar R, Ibiebele I, et al. Stillbirths: Where? When? Why? How to make the data count? *Lancet*. 2011;377(9775):1448–63 ([http://dx.doi.org/10.1016/S0140-6736\(10\)62187-3](http://dx.doi.org/10.1016/S0140-6736(10)62187-3), accessed 23 October 2020).

Liu L, Kalter HD, Chu Y, Kazmi N, Koffi AK, Amouzou A, et al. Understanding misclassification between neonatal deaths and stillbirths: empirical evidence from Malawi. *PLoS One*. 2016;11(12):e0168743 (<https://doi.org/10.1371/journal.pone.0168743>, accessed 23 October 2020).

GLOBAL MONITORING

The Every Newborn Action Plan (ENAP), a global multi-partner movement to end preventable newborn deaths and stillbirths, set a target for national stillbirth rates of 12 or fewer stillbirths per 1000 births in all countries by 2030, accompanied by action in countries to address disparities. Progress in reducing the large worldwide stillbirth burden remains slow and insufficient to meet national targets of the ENAP (17). To reach this target, countries will need to act to reduce preventable stillbirths and improve monitoring of stillbirth (14, 16). The indicator and monitoring framework for the Global Strategy for Women’s, Children’s and Adolescents’ Health (2016–2030) focusing on its Survive, Thrive and Transform objectives lists the stillbirth rate as one of 16 key indicators selected as a minimum subset to provide a snapshot of progress on the Global Strategy (18). Stillbirths are increasingly being counted at a local level, but countries and the global community must further improve the quality and comparability of data and ensure that this is more clearly linked to accountability processes, including the Sustainable Development Goals (SDGs).

Global database

The stillbirth rate per 1000 births by country is monitored and tracked by the WHO Global Health Observatory (GHO). More information about the WHO GHO data repository for stillbirth estimates by country can be found at: <https://apps.who.int/gho/data/view.main.GSWCAH06v>.

Key initiatives

Countdown to 2030 – Women’s, Children’s and Adolescents’ Health: <http://countdown2030.org/>

Every Newborn Action Plan (ENAP): http://apps.who.int/iris/bitstream/10665/127938/1/9789241507448_eng.pdf

Global Reference List of 100 Core Health Indicators (plus health-related SDGs), 2018: <https://www.who.int/healthinfo/indicators/2018/en/>

Global Strategy for Women’s, Children’s and Adolescents’ Health (2016–2030): <http://www.who.int/life-course/partners/global-strategy/en/>

ADDITIONAL RESOURCES

Global Health Observatory (GHO) Data – World Health Statistics: http://www.who.int/gho/publications/world_health_statistics/en/

Making Every Baby Count: Audit and review of stillbirths and neonatal deaths: http://www.who.int/maternal_child_adolescent/documents/stillbirth-neonatal-death-review/en

MEASURE Evaluation. Family Planning and Reproductive Health Indicators Database: Intrapartum or fresh stillbirth rate: <https://www.measureevaluation.org/rbf/indicator-collections/health-outcome-impact-indicators/intrapartum-or-fresh-stillbirth-rate>

The DHS Program: <https://dhsprogram.com>

The WHO application of ICD-10 to deaths during the perinatal period: ICD-PM: <https://apps.who.int/iris/bitstream/handle/10665/249515/9789241549752-eng.pdf>

UNICEF – Multiple Indicator Cluster Surveys: <http://mics.unicef.org/tools>

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