

Report on Definitions and Methodology for MDGs 4 and 5

Introduction

This report discusses issues in the definitions and reporting of indicators related to Millennium Development Goals 4 and 5, which aim to protect maternal and child health. Countries monitor a number of indicators to track the progress towards a reduction in maternal and child mortality. Indicators of this progress include mortality rates for mothers and children, the prevalence of vaccination and breast-feeding, contraception and abortion rates, and health-care available prior to, during, and after a birth. Providing adequate data definitions and methods is a necessity to measure the progress countries make towards their goals and to enable international comparison.

Maternal, infant and child mortality statistics can be a challenge to collect and present with confidence. Many countries in the region express concern with under-reporting or misclassification of these events. Despite such challenges, the majority of countries provide data on indicators for these goals. Whether reported figures come from estimates or comprehensive data, more of an effort needs to be made to accompany the supplied data with description. Mortality and health-care indicators are fairly straightforward, and definitions are unambiguous. However, data limitation or hospital procedures affect the way figures are collected and computed within each country. Current country reports for the most part do not provide adequate notes on sources of data, data collection or method, and on computation of indicators. Despite the non-technical audiences of the report, basic definitions included (even in footnotes) would enhance the quality of the content.

There are several basic steps to improve the quality of data reporting. Sources of data should be provided and clearly labeled, whether these are specific publications or simply the country's statistical office. When data are presented via trend-lines in figures, it is helpful that these figures are accompanied by tables of numbers (whether in the text or as an appendix). Countries may choose to include caveats and discuss issues of data collection. Changes in methodology or data collection practices should be noted. Over all, reports should strive to include definitions, methods, and notes.

The majority of mortality and health statistics are ratios. Therefore, it is at minimum necessary to define what numbers are being used in the ratio. Maternal and child/infant mortality statistics in particular deserve careful consideration. This report will present an overview of the indicators measured under targets four and five, and briefly note the specific information that should be provided to accompany country data points. Table 1 at the end of the report also summarizes the level of data reporting for these indicators.

Target 4: Reduce child mortality

Target 4 addresses the issues of child health. The three key indicators for this target are infant mortality, under-5 mortality, and the proportion of children under one who are vaccinated against measles. Overall, child and infant mortality statistics can be difficult to collect, and can under-represent child mortality. In order for countries to monitor their progress towards goals, and to facilitate international comparison, reports need to note methodologies and definitions, rather than providing only figures. At present, many reports provide notes to some extent on the methods of collecting and computing the indicators, but this information can be expanded.

Indicator 4.1: Under-Five Mortality Rate.

This indicator is a measure of child mortality to age five. Most child mortality is concentrated in these ages, and improvements in the child mortality rate signal a general improvement of health conditions of a country's children. The three major details to note for this indicator is the source of data, the method used to calculate the mortality rate, and the definition used of a live birth.

The standard definition for this indicator is: "The probability of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates." The computation for this indicator relies on age-specific mortality rates which are calculated from data on births and deaths in vital statistics registries, censuses, or household surveys. In countries where vital statistics registries are not reliable, survey data (such as DHS or MICS) can be used to produce an estimate of rates, based on retrospective studies. It is important that reports include information on the source of the data. The age-specific mortality data are then summed up for children under five, and the results are expressed as a rate per 1,000 live births.¹

However, some reported statistics do not follow this method of computation. It is fairly common to report the number of deaths to children under five as a proportion of all children under five. In some cases, data is expressed in other ways, such as total deaths per 1,000 live births. In either case, such methods of computation provide a different estimate from one which applies current mortality rates to a one-year cohort. Thus it is crucial that a methodological note is made on the computation of this indicator. Such notes can be included in text, footnotes, or tables, but should be as specific as possible.

The final source of differences in reporting this indicator is based on defining live births. Because the indicator is expressed per 1,000 live births, major differences occur due to differences in hospital definitions of a "live birth." A more restrictive definition (one which requires a certain weight or duration of gestation) produces a lower estimate of infant/child mortality than a less restrictive definition. For this reason, specifying the definition widely practiced is very important. According to the WHO, live births are defined according to the following criteria:

¹ Indicators for Monitoring the Millennium Development Goals. United Nations Development Group. United Nations, New York. 2003.

“Live birth refers to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.”

This definition is minimally restrictive, as it allows for the maximum events to be counted in infant and child mortality estimates. There are other, more restrictive definitions which are standard medical practice across the region. The most common of these is the old Soviet definition of a live birth. The Soviet definition follows the following restrictions:

“A live born has at least 28 weeks of gestation, a birth weight of at least 1000 grams, a length of at least 35 centimeters, and a life of at least seven days, with breath as the only criterion of life.”

Many countries in the region used to adhere to the Soviet definition of a live birth. With the independence of these countries in the 1990s, some have changed methods to adhere to the WHO (or other) definitions. However, in some countries, live birth continues to be defined by the Soviet protocol. Therefore, in order to contextualize the data presented and to facilitate international comparison it is very important that reports include the definition of a live birth used within the country.

The major three issues for the under-five mortality rate are thus the source of the data, the method of computation, and the definition of a live birth used in the calculation of the indicator.

Twenty two countries report the under-5 mortality rate in some form (the exceptions being Lithuania, Russia, Slovakia, and Turkmenistan). A further five countries (Albania, Armenia, Bosnia, Latvia, and Ukraine) provide five or fewer data points for the last twenty years. Finally, Georgia, Hungary, Montenegro, Slovenia, Tajikistan, and Turkey, report the number of deaths to children under 5, rather than a mortality rate. Overall, however, the level of coverage for this indicator is among the strongest, despite the fact that many countries do not report the method or source for their data.

Indicator 4.2: Infant Mortality Rate.

Reporting of the infant mortality rate faces the same considerations as the under-five mortality rate. While the under-five mortality rate is important for monitoring early child health, the infant mortality indicator is also critical for measuring country progress in the health of mothers during pregnancy, assistance during the birth, and infant health care. The most standard definition of the infant mortality rate is similar to the under-five mortality rate. The infant mortality rate (IMR) is the probability of a child born in a specified year dying before reaching the age of one, if subject to current age-specific mortality rates.²

Similarly to the under-five mortality rates, the IMR is calculated per 1,000 live births. These births are typically defined by the WHO guidelines, according to which a live birth refers to

² Indicators for Monitoring the Millennium Development Goals. United Nations Development Group. United Nations, New York. 2003.

“The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.”

Like the under-five mortality rate, countries should take care in noting the source of the data, as well as the definition used for a live birth.

The final difficulty which should be noted for reporting both infant and child mortality is under-reporting and inadequate access to data. Infant mortality, in particular, is challenging to capture completely. This is a pervasive issue, but most countries where under-reporting is widespread mention this fact in their reports. Further, other sources of information, such as surveys (e.g. DHS) or data provided by external agencies, are also occasionally included in reports along with nationally collected data in order to contrast the different types of figures available. Despite under-reporting a decline in mortality rates over time is likely to be significant, if the likelihood of under-reporting is stable. Nevertheless, to inform users of the data for cross-national comparison, reports should include notes on the quality of the data collected.

The infant mortality rate is very well reported (Russia is the only state with missing data). However, Czech Republic, Georgia, Hungary Latvia, Slovakia, Slovenia, and Turkmenistan are all countries which provide five or fewer data points from the last twenty years. Many countries do not note the source of the data.

Indicator 4.3: Percentage of 1 year-olds vaccinated against measles.

This indicator is a measure of infant vaccination against measles. Because the first dose of the vaccine has to be administered around 9 months of age, and because about 15% of infants are immune to the vaccine, countries should aim for 90% or higher coverage.³ There are few ambiguities with the definition for this indicator. However, authors of reports should be careful to state which sample of children is referred to in the figures, as some countries report vaccinations for children younger than 1 year of age, 13 months, 18 months, etc. Many reports also include information on other vaccinations, based on specific country concerns.

Though vaccination coverage is relatively well reported, 8 out of 26 countries do not provide data on this indicator (Bulgaria, Czech Republic, Hungary, Latvia, Republic of Moldova, Slovenia, Turkmenistan). A further 4 provide data for a different or unspecified age range (Georgia, Kazakhstan, Serbia, Slovakia). Finally, 9 countries have provided 5 or fewer data points (Armenia, Lithuania, Montenegro, Romania, Russia, Tajikistan, Turkey, Ukraine, Uzbekistan).

³ Indicators for Monitoring the Millennium Development Goals. United Nations Development Group. United Nations, New York. 2003.

Other Indicators

Various countries have adopted indicators and targets based on specific national health concerns. Indicators of particular importance in certain countries are data on the perinatal mortality rate, the rate of stillbirths and fetal deaths. As an indicator of infant health, the proportion of infants breast-fed (under 3,4, or 6 months) is often of particular concern. Nine countries collect data on infants being breast-fed to these ages (Azerbaijan, Bosnia and Herzegovina, FYR Macedonia, Kazakhstan, Latvia, Montenegro, Serbia, Republic of Moldova and Russia). However, data reporting for these indicators is sporadic and most countries provide few data points. Due to the national nature of these targets, standard definitions are not available for all indicators.

Target 5: Improving Maternal Health

This target aims to protect the health of mothers and of women of reproductive age. Target 5.A is to reduce by three quarters, between 1990 and 2015, the maternal mortality ratio. The indicators included in this target are the maternal mortality ratio and the proportion of births attended by skilled health personnel. Though there are challenges to accurate data on maternal mortality, most countries present some data points on these indicators. Target 5.B is to achieve, by 2015, universal access to reproductive health. The indicators for this target are contraceptive prevalence rate, the adolescent birth rate, antenatal care coverage, and unmet need for family planning. The countries in the region are especially concerned with abortion prevalence and the transmission of STIs. However, most countries focus on tracking maternal mortality, adolescent fertility, and abortion rates, rather than contraceptive usage.

Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

Indicator 5.1: Maternal Mortality Ratio

The maternal mortality is the ratio of pregnancy-related deaths to the total number of births in a year. Many countries have issues with reliable estimates of maternal mortality. However, some data on maternal death ratio are reported by most countries. This indicator is a simple ratio of women's death as a result of childbirth to the total number of women giving births. The most standard definition for the Maternal Mortality Ratio is:

"The annual number of maternal deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, per 100,000 live births, for a specified year."

The maternal mortality ratio can be calculated by dividing recorded (or estimated) maternal deaths by total recorded or estimated) live births in the same period and multiplying by 100,000. The indicator can be calculated directly from data collected through vital statistics registrations,

or from household surveys. The majority of reports do state the maternal mortality figure, and that it expressed per 100,000 live births. However, these reports do not state what constitutes a live birth, or the time duration after pregnancy at which a maternal death is classified as such.

The issues with reporting the maternal mortality ratio are thus similar to those of infant and child mortality figures. Reports should include definitions of live birth practiced medically in the country, and the source of the figures. Where estimates of maternal deaths from surveys are available for sub-populations, such figures can be provided as a comparison with officially provided figures.

Despite challenges in collecting data, only two countries do not report the maternal mortality ratio (Bulgaria and Slovakia), and a further five report five or less data points (Bosnia, Herzegovina, Czech Republic, FYR Macedonia, Georgia, and Hungary).

Indicator 5.2: Proportion of Births Attended by Skilled-health Personnel

Due to the difficulties of measuring maternal mortality accurately, countries measure a number of other indicators related to the availability of professional care during pregnancy and childbirth. The presence of skilled-health personnel at birth is a strong indicator of women's likelihood of surviving complications at birth, and of being treated for any birth-related issues. This indicator measures the percentages of all births attended by a medically trained health-care provider. A skilled birth attendant is defined in the following way:

“An accredited health professional (midwife, nurse, doctor) trained and able to manage uncomplicated pregnancy, childbirth, postnatal period, and able to identify, manage, refer complications of women and newborns.”

This definition also explicitly excludes traditional birth attendants (with or without training), and thus captures the availability of health care facilities to mothers at birth.

This indicator is reported by 21 out of 26 countries (with the exceptions of Hungary, Latvia, Russia, Slovakia, Ukraine, and Uzbekistan). A further six countries provide five or less data points (Albania, Bulgaria, Czech Republic, Slovenia, Tajikistan, Turkey, and Turkmenistan).

Target 5.B: Achieve, by 2015, universal access to reproductive health

To monitor progress towards this target, these indicators measure the availability of contraception and health care. Most countries in the region are primarily concerned with adolescent births and contraceptive prevalence. However, data on these indicators is seldom provided because it is collected through surveys rather than vital events registries.

Indicator 5.3: Contraceptive Prevalence Rate

The contraceptive prevalence rate is measured as the percentage of women married (or in a union) aged 15 to 49 who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used. These data come from sample surveys

and may not be available, or may only be available for certain years. Countries which report the contraceptive prevalence rates are Armenia, Azerbaijan, Bosnia, Czech Republic, Kazakhstan, Serbia, Tajikistan, and Turkey.

Indicator 5.4: Adolescent Birth Rate

The adolescent birth rate is also often referred to as the teenage pregnancy rate in country reports. Regardless of the nomenclature it measures the risk of childbearing among adolescent women, 15-19 years old. This indicator is an important measure for maternal health as adolescent pregnancies are more likely to be risky to mothers, as well as of contraceptive availability. It is calculated as the annual number of births to adolescent women in the numerator per 1,000 women in that age group. There are few methodological issues, except the definition of “adolescence” which may vary. This indicator is reported only by Armenia, Belarus, Kazakhstan, Kyrgyzstan, Romania, and Serbia.

Indicator 5.5: Antenatal Care Coverage

This indicator is a measure of health service coverage. It is measured as a percentage of all women aged 15-49 with a live birth who received antenatal care during their pregnancy. The main difference in the way countries collect and report this indicator is whether coverage is defined as at least one or at least four antenatal visits. The source of the data (typically a survey), should also be included. This indicator is reported only by six countries, and not consistently (Albania, Armenia, Belarus, Kazakhstan, Serbia, Turkey).

Indicator 5.6: Unmet Need for Family Planning

This is a complex indicator to measure the need for family planning, which is tracked by few countries. The unmet need is the gap between women's reproductive intentions and their contraceptive behaviour. Unmet need is a percentage, based on women aged 15-49 who are married or in a union. It is calculated based on women who are fecund and sexually active, not using any method of contraception, report not wanting any more children or wanting to delay the next child. The data for this indicator are not typically collected as most countries in the region do not have concerns about unplanned family behaviour and contraceptive availability; they focus instead on contraceptive usage in the context of sexually transmitted infections. Only Armenia and Turkey have reported data on this indicator.

Abortion

A number of countries in the ECE region have an especial focus on monitoring abortion rates from the view of women's health. Countries which report abortion rates include Armenia, Azerbaijan, Belarus, Bulgaria, Czech Republic, FYR Macedonia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Montenegro Slovenia, Tajikistan, Ukraine, and Uzbekistan. Belarus, Serbia, and Slovenia also report statistics on adolescent abortions as a special case.

Conclusion

This report has summarized the main indicators which monitor progress on MDGs 4 and 5, referring to maternal and child health and mortality. As can be seen above, the indicators are fairly unambiguous and definitions are standard. Much of the data can be calculated from vital events registries. The main issues are in identifying the source of data and making notes of the method of calculating various mortality ratios. Despite weaknesses in providing methodological comments on data, most countries provide data which can be used to measure progress and make international comparison.

Table 1: Coverage of main MDG indicators

	Infant Mortality Rate	Under 5 Mortality Rate	Measles Vaccination	Maternal Mortality Ratio	Skilled Health Attendant
Albania	Consistent coverage	5 or fewer data points / more data on deaths per 1,000 children under 5	Consistent coverage	Consistent coverage	5 or fewer data points
Armenia	Consistent coverage	5 or fewer data points / more data on deaths per 1,000 children under 5	5 or fewer data points / More data for children under 2	Consistent coverage	Consistent coverage
Azerbaijan	Consistent coverage	Consistent Coverage	Consistent coverage	Consistent coverage	Consistent coverage
Belarus	Consistent coverage	Consistent Coverage	Consistent coverage	Consistent coverage	Consistent coverage
Bosnia and Herzegovina	Consistent coverage	5 or fewer data points / more data on deaths per 1,000 children under 5	Consistent coverage	5 or fewer data points	Consistent coverage
Bulgaria	Consistent coverage	5 or fewer data points	No data	No data	5 or fewer data points
Czech Republic	5 or fewer data points	5 or fewer data points	No data	5 or fewer data points	5 or fewer data points
FYR Macedonia	Consistent coverage	Consistent Coverage	Consistent coverage	5 or fewer data points	Consistent coverage
Georgia	5 or fewer data points	5 or fewer data points	Data for children under 2	5 or fewer data points	Consistent coverage
Hungary	5 or fewer data points	5 or fewer data points	No data	Few points, for women at fertile age	No data
Kazakhstan	Consistent coverage	Consistent Coverage	Unspecified ages	Consistent coverage	Consistent coverage
Kyrgyzstan	Consistent coverage	Consistent Coverage	Consistent coverage	Consistent coverage	Consistent coverage
Latvia	5 or fewer	Data on	No data	Consistent	No data

		data points	deaths per 1,000 children under 5		coverage
Lithuania	Consistent coverage	No data	5 or fewer data points	Consistent coverage	No data
Montenegro	Consistent coverage	5 or fewer data points	5 or fewer data points	Consistent coverage	Consistent coverage
Republic of Moldova	Consistent coverage	Consistent Coverage	No data	Consistent coverage	Consistent coverage
Romania	Consistent coverage	Consistent Coverage	5 or fewer data points	Consistent coverage	Consistent coverage
Russian Federation	No data	No data	5 or fewer data points	Consistent coverage	No data
Serbia	Consistent coverage	Consistent Coverage	5 or fewer data points, for children under 18 months	Consistent coverage	Consistent coverage
Slovakia	5 or fewer data points	No data	5 or fewer data points, for children under 18 months	No data	No data
Slovenia	5 or fewer data points	5 or fewer data points	No data	Consistent coverage	5 or fewer data points
Tajikistan	Consistent coverage	5 or fewer data points	5 or fewer data points	Consistent coverage	5 or fewer data points
Turkey	Consistent coverage	5 or fewer data points	5 or fewer data points	Consistent coverage	5 or fewer data points
Turkmenistan	5 or fewer data points	No data	No data	Consistent coverage	5 or fewer data points
Ukraine	Consistent coverage	Data on deaths per 1,000 children under 5	5 or fewer data points	Consistent coverage	No data
Uzbekistan	Consistent coverage	5 or fewer data points	5 or fewer data points	Consistent coverage	No data