

Selected Health Indicators

The following document is a selection of indicators taken from the Catalogue of WHO Health Indicators.

Included in this document are:

- Introduction and the Indicator categories
- Selected Indicators

The full document can be obtained through eha@who.ch

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A3.1 Mothers' Knowledge of Home Therapy for Diarrhoea

Goal - TO ENSURE SURVIVAL AND HEALTHY DEVELOPMENT OF CHILDREN THROUGH REDUCTION BY 50% IN THE DEATHS DUE TO DIARRHOEA IN CHILDREN UNDER THE AGE OF 5 YEARS AND 25% REDUCTION IN THE DIARRHOEA INCIDENCE RATE BY THE YEAR 2000. (Source: World Summit for Children)

I. Definition of indicator:

Proportion of surveyed mothers who know the three rules (fluids, feeding, care seeking) of home diarrhoea case management out of all surveyed mothers with children under 5 years old

Numerator Number of surveyed mothers who know the three rules (fluids, feeding, care seeking) of home diarrhoea case management.

Denominator Number of surveyed mothers with children under 5 years old.

II. Definition of important terms

- *Diarrhoea*: three or more loose or watery stools in a 24-hour period, a loose stool being one that would take the shape of the container; or local definition of diarrhoea.
- *Episode of diarrhoea*: an episode of diarrhoea begins with a 24-hour period with three or more loose or watery stools. An episode of diarrhoea is considered to have ended after 48 hours without three or more loose or watery stools within a 24-hour period.
- *Increased fluid*: more fluid consumed during diarrhoea than before diarrhoea started.
- *Continued feeding*: about the same or more food consumed during diarrhoea than before diarrhoea started.
- *Knowledge of care seeking*: ability to respond to an open-ended question by identifying at least two of the following signs:
 - many watery stools
 - repeated vomiting
 - marked thirst
 - lack of appetite and capability to drink well
 - fever
 - blood in stool
 - worsening sickness
- *Care seeking*: taking a child with diarrhoea danger signs to a health worker.

III. Common data sources

Household surveys as recommended in the CDD/ARI household survey manual (see reference).

IV. Recommended Data collection methods

The CDD/ARI Household Survey is designed to collect qualitative as well as quantitative information on diarrhoea episodes occurring within the past two

weeks. The manual includes instructions on how to convert the results to an annual incidence rate taking into account seasonal variations.

V. Uses

The indicator is useful as:

- a determinant of the risks for complications for untreated diarrhoea among children under 5 years,
- a determinant of mothers' knowledge of when to seek care for diarrhoea,
- a guide for targeted health education programmes for mothers.

VI. Recommended format for presentation

The indicator should be disaggregated by mother's education and geographical area.

VII. References

Household survey manual: diarrhoea and acute respiratory infections.
Geneva, World Health Organization, 1994 (Unpublished document WHO/CDR/94.8).

A3.2 Management of Diarrhoea Episodes

Goal - TO ENSURE SURVIVAL AND HEALTHY DEVELOPMENT OF CHILDREN THROUGH REDUCTION BY 50% IN THE DEATHS DUE TO DIARRHOEA IN CHILDREN UNDER THE AGE OF 5 YEARS AND 25% REDUCTION IN THE DIARRHOEA INCIDENCE RATE BY THE YEAR 2000. (Source: World Summit for Children)

I. Definition of indicator

Proportion of all diarrhoea cases in children under 5 years old receiving increased amount of fluid and continued feeding

Numerator The number of childhood cases receiving increased fluid and continued feeding.

Denominator The number of diarrhoea cases in children under 5 years old.

II. Definition of important terms

- *Diarrhoea*: three or more loose or watery stools in a 24-hour period, a loose stool being one that would take the shape of the container; or local definition of diarrhoea.
- *Episode of diarrhoea*: an episode of diarrhoea begins with a 24-hour period with three or more loose or watery stools. An episode of diarrhoea is considered to have ended after 48 hours without three or more loose or watery stools within a 24-hour period.
- *Increased fluid*: more fluid consumed during diarrhoea than before diarrhoea started.
- *Continued feeding*: about the same or more food consumed during diarrhoea than before diarrhoea started.

III. Common data sources

Household surveys as outlined in the CDD/ARI household survey manual (see reference).

IV. Recommended Data collection methods

The CDD/ARI Household Survey is designed to collect qualitative as well as quantitative information on diarrhoea episodes occurring within the past two weeks. The manual includes instructions on how to convert the results to an annual incidence rate taking into account seasonal variations.

V. Uses

The indicator is useful for monitoring the quality of home care for childhood diarrhoea and devising appropriate health education programmes.

VI. Recommended format of presentation

For devising appropriate health education programmes, the indicator is best disaggregated by mother's education and geographical area.

VII. References

Household survey manual: diarrhoea and acute respiratory infections. Geneva, World Health Organization, 1994 (Unpublished document WHO/CDR/94.8).

A3.3 Incidence of Diarrhoea in Children Under 5 Years of Age †

Goal - To ensure survival and healthy development of CHILDREN through reduction by 50% in the deaths due to diarrhoea in children under the age of 5 years and 25% reduction in the diarrhoea incidence rate. (Source: World Summit for Children)

TO PROMOTE SOUND WEANING PRACTICES BY ENCOURAGING THE USE OF NUTRITIONALLY ADEQUATE AND SAFE FOOD THROUGH THE INTEGRATION OF FOOD SAFETY INTO PRIMARY HEALTH CARE MEASURES. (Source: International Conference on Nutrition)

I. Definition of indicator

Annual number of cases (episodes) of diarrhoea per child under five years of age.

Numerator: Total number of episodes of diarrhoea among children under 5 during a 1-year period.

Denominator: The number of children under 5 years of age.

II. Definition of important terms

- *Diarrhoea:* three or more loose or watery stools in a 24-hour period, a loose stool being one that would take the shape of the container; or local definition of diarrhoea.
- *Episode of diarrhoea:* an episode of diarrhoea begins with a 24-hour period with three or more loose or watery stools. An episode of diarrhoea is considered to have ended after 48 hours without three or more loose or watery stools within a 24-hour period.

III. Data source

Surveys as recommended in the CDD/ARI household surveys manual (see reference **Error! Reference source not found.**).

IV. Recommended data collection methods

The CDD/ARI Household Survey is designed to collect qualitative as well as quantitative information on diarrhoea episodes occurring within the past two weeks. The manual includes instructions on how to convert the results to an annual incidence rate taking into account seasonal variations.

V. Uses

- A rough measure of the magnitude of the problem of childhood diarrhoea which could be used for resource allocation for diarrhoea management and control.
- A rough measure of the safety of food which could be used for resource allocation for diarrhoea prevention.

VI. Recommended format for presentation

To be useful for resource allocation, the indicator should be disaggregated by health service (geographic) area.

VII. References

1. *Readings on Diarrhoea: Student Manual..* Geneva, World Health Organization, 1992 (Unpublished document of the Division for the Control of Diarrhoeal and Acute Respiratory Disease)
2. *Contaminate Food. A major cause of diarrhoea and associated malnutrition among infants and young children.* Facts about infant feeding No. 3. Geneva, World Health Organization, 1993.
3. *Household survey manual: diarrhoea and acute respiratory infections.* Geneva, World Health Organization, 1994 (Unpublished document WHO/CDR/94.8).

A3.4 Deaths Due to Diarrhoea Among Infants and Children Under 5 Years of Age*

Goal - To ensure survival and healthy development of children through reduction by 50% in the deaths due to diarrhoea in children under the age of five years and 25% reduction in the diarrhoea incidence rate. (Source: World Summit for Children)

I. Definition of indicator

The number of reported child deaths (under 5 years of age) due to diarrhoea.

II. Definition of important terms

- *Diarrhoea*: three or more loose or watery stools in a 24-hour period, a loose stool being one that would take the shape of the container; or local definition of diarrhoea.

III. Common data sources

Data on childhood deaths due to diarrhoea, especially in developing countries, are rare. In some countries data may be available from demographic surveillance systems, or from household surveys; in a very few cases, from vital registration or sample registration systems. In a number of countries the DHS surveys have included a verbal autopsy module aimed at collecting information on cause of death in children.

IV. Recommended data collection methods

No specific method is recommended for use by national programmes.

V. Uses

Although this is an *outcome* indicator, it is useful for monitoring the effectiveness of the management of childhood diarrhoea in health facilities and at home.

VI. Recommended forms for presentation

It is desirable, if at all possible, to disaggregate the deaths by age and sex of the child, economic status of the parents and geographic area.

VII. Reference

The measurement of overall and cause-specific mortality in infants and children. Report of a joint WHO/UNICEF Consultation, 15–17 December 1992. Geneva, World Health Organization, 1992.

A4.1 Wild Polio Virus Surveillance Rate

Goal - TO DETERMINE THE ABILITY OF A POLIO SURVEILLANCE SYSTEM TO DETECT WILD POLIO VIRUS. (Target at least 80%)

I. Definition of indicator

Proportion of reported acute flaccid paralysis (AFP) cases for which 2 stool specimens have been collected within 14 days following onset of paralysis.

Numerator: Number reported AFP cases for which 2 stool specimens have been collected within 14 days following onset of paralysis.

Denominator: Total number of reported AFP cases

II. Definition of important terms

- *Acute flaccid paralysis:* The differential diagnosis of acute flaccid paralysis includes paralytic poliomyelitis, Guillain–Barré syndrome and transverse myelitis; less common aetiologies are traumatic neuritis, encephalitis, meningitis and tumours. Distinguishing characteristics of paralytic polio are asymmetric flaccid paralysis, fever at onset, rapid progression of paralysis, residual paralysis after 60 days, and preservation of sensory nerve function.
- *Reverse cold chain:* A process by which stool specimens are maintained at 4–8°C or stored at –20°C from the moment of collection until processing in the laboratory. If a reverse cold chain is not properly maintained, polio virus will not survive in the stool.

III. Common data sources

- AFP investigations.
- Accredited polio network laboratories.

IV. Recommended data collection methods

- Routine reporting of AFP investigations.
- Routine reporting by accredited polio network laboratories
- Retrospective review of accredited polio network laboratories registries

V. Use

To insure adequate surveillance for wild polio virus

VI. Recommended format of presentation

The indicator should be disaggregated by district

VII. References

1. *Field guide for supplementary activities aimed at achieving polio eradication*. Geneva, World Health Organization, 1995 (Unpublished document WHO/EPI/GEN/95.01. Rev.1)
2. *Manual for the virological investigation of polio*. Geneva, World Health Organization, 1997 (Unpublished document WHO/EPI/GEN/97.01)
3. *Global poliomyelitis eradication by the year 2000. Plan of action*. Geneva, World Health Organization, 1996 (Unpublished document WHO/EPI/GEN/96.03).

A4.2 Immunization Coverage

Goal - TO ENSURE SURVIVAL AND HEALTH DEVELOPMENT OF CHILDREN THROUGH MAINTENANCE OF A HIGH LEVEL OF IMMUNIZATION COVERAGE (AT LEAST 90% OF CHILDREN UNDER ONE YEAR OF AGE BY THE YEAR 2000) AGAINST DIPHTHERIA, PERTUSSIS, TETANUS, MEASLES, POLIOMYELITIS, TUBERCULOSIS, AND AGAINST TETANUS FOR WOMEN OF CHILD-BEARING AGE. (Source: World Summit for Children)

I. Definition of indicator

Proportion of children immunized against diphtheria, pertussis, and tetanus (DTP3), poliomyelitis (OPV3), hepatitis B (HBV3), and measles before their first birthday (and yellow fever in countries with yellow fever risk).

Numerator: Number of doses of BCG, DTP3, OPV3, HBV3, or measles vaccine (and yellow fever vaccine in countries considered at risk) administered to children under one year of age.

Denominator: Number of live births surviving the first year of life (surviving infants)

II. Definition of important terms

None

III. Common data sources

- Immunization programmes
- Sample surveys

IV. Recommended data collection methods

- Routine reporting of doses administered by immunization services.
- Sample surveys using the EPI cluster survey methodology.

V. Use

- Monitor immunization services' coverage
- Identify areas where immunization services should be improved

VI. Recommended format of presentation

Pattern maps of immunization coverage by vaccine and district

VII. References

The EPI coverage survey. Training for mid-level managers. Geneva, World Health Organization, 1991 (Unpublished document WHO/EPI/MLM/91.10)

A4.3 Tetanus Immunization Coverage for Women of Child-Bearing Age*

Goal - MAINTENANCE OF A HIGH LEVEL OF IMMUNIZATION COVERAGE AGAINST TETANUS FOR WOMEN OF CHILD-BEARING AGE. (Source: World Summit for Children)

I. Definition of indicator

Proportion of pregnant women immunized against tetanus (TT2 or booster).

Numerator: Number of doses of TT2 + TT3 + TT4 + TT5 administered to pregnant women.

Denominator: Estimated number of new-borns.

(The number of new-borns is used as a proxy for the number of pregnant women)

II. Definition of important terms

None

III. Common data sources

- Health facility service records,
- Health reports,
- Immunization coverage survey reports.

IV. Recommended data collection methods

Measurement of coverage can be done either through routine reporting of vaccinations performed annually or through nation-wide survey (e.g. EPI 30 cluster survey methodology).

V. use

The indicator is used as a measure of coverage of immunization of women in child-bearing age against tetanus.

VI. Recommended format of presentation

Map of coverage by district

VII. References

The EPI coverage survey. Training for mid-level managers. Geneva, World Health Organization, 1991 (Unpublished document WHO/EPI/MLM/91.10)

Revised plan of action for neonatal tetanus elimination. Geneva, World Health Organization, 1994 (Unpublished document WHO/EPI/GEN/94.04)

[A4.5 Incidence of Polio](#)

Goal - GLOBAL ERADICATION OF POLIOMYELITIS BY THE YEAR 2000. (Source World Summit for Children)

I. Definition of indicator

Annual number of new cases of polio

II. Definition of important terms

- *Suspect case of polio*: Any patient with acute flaccid paralysis (AFP) (see page **Error! Bookmark not defined.** for AFP classification) (including any child under 15 years of age with Guillain–Barré Syndrome) for which no other cause is identified.
- *Confirmed case of polio*: A case of polio may be confirmed based upon clinical features of a suspect case or upon virological evidence. For surveillance purposes a National Programme should adopt one classification scheme

III. Common data sources

- Health care facilities, especially paediatric and neurological services.
- Accredited polio network laboratories.

IV. Recommended data collection methods

- Routine reporting by health care facilities and laboratories, especially paediatric and neurological services. A suspect case of polio should be reported immediately to the appropriate authorities and case investigation begun within 48 hours. Two stool specimens should be collected within 14 days and at least 24 hours apart. Stool specimens should be appropriately collected, packed and dispatched to a national accredited polio reference lab for virus isolation.
- Retrospective review of health care facilities' medical records/registers and laboratory findings.

V. Use

- Track wild polio virus circulation
- Determining appropriate time to conduct national immunization days
- Determining when and where to conduct supplemental immunization activities

VI. Recommended format of presentation

- Table of reported polio cases by district and month for the previous twelve months

- Bar graph of polio cases by month
- Spot map of polio cases by geographic location.

VII. References

Improving routine systems for surveillance of infectious diseases including EPI target diseases. Guidelines for national programme managers. Geneva, World Health Organization, 1998 (Unpublished document WHO/EPI/TRAM/93.1)

Field guide for supplementary activities aimed at achieving polio eradication. Geneva, World Health Organization, 1995 (Unpublished document WHO/EPI/GEN/95.01. Rev.1)

Responding to a suspected polio outbreak: Case investigation, surveillance, and control. A managers checklist. Geneva, World Health Organization, 1991 (Unpublished document WHO/EPI/POL/91.3)

Manual for the virological investigation of polio. Geneva, World Health Organization, 1997 (Unpublished document WHO/EPI/GEN/97.01)

Global poliomyelitis eradication by the year 2000. Plan of action. Geneva, World Health Organization, 1996 (Unpublished document WHO/EPI/GEN/96.03).

Report of the technical consultative group on polio eradication, April 1996. Geneva, World Health Organization, 1996 (Unpublished document WHO/EPI/GEN/96.04)

A4.6 Incidence of Measles

Goal - REDUCTION OF 90% OF MEASLES CASES FROM PER-IMMUNIZATION LEVELS. (Source: World Summit for Children).

I. Definition of indicator

Annual number of cases of measles

II. Definition of important terms

- *Measles clinical case*: An individual with:
 - a generalized maculopapular rash; and
 - fever of at least 38°C (101°F) or “hot to the touch” if temperature not available; and
 - at least one of the following: cough, runny nose, (coryza), red eyes (conjunctivitis).
- *Measles confirmed case*: Any person meeting the clinical case definition that is laboratory confirmed or linked epidemiologically to a laboratory confirmed case.
- *Laboratory confirmation of measles*: Presence of measles-specific IgM antibodies or at least a four-fold increase in antibody titre or isolation of measles virus

III. Common data sources

Health care facilities

IV. Recommended data collection methods

Routine reporting systems

V. Use

Monitoring impact of measles immunization services

VI. Recommended format of presentation

- Tables of measles cases and incidence rates by geographic area
- Pattern maps of measles cases
- Graph of age distribution of measles cases by year

VII. References

Measles control in the 1990s: Principles for the next decade. Geneva, World Health Organization, 1990 (Unpublished document WHO/EPI/GEN/90.02)

A6.1 Infant Mortality *†

Goal - TO ENSURE SURVIVAL AND HEALTHY DEVELOPMENT OF CHILDREN, WITH THE TARGET OF REDUCTION OF INFANT AND UNDER-FIVE CHILD MORTALITY RATE BY ONE-THIRD OR TO 50 AND 70 PER LIVE BIRTHS RESPECTIVELY, WHICHEVER IS LESS BETWEEN 1990 AND THE YEAR 2000.
(Source: World Summit for Children)

I. Definition of indicator¹

Infant mortality rate per 1000 live births in the same period.

Numerator Number of deaths of infants under one year of age, in a given period of time x 1000

Denominator Number of live births in the same period of time

II. Definition of important terms

None.

III. Common data sources

Vital registration, sample registration systems, surveillance systems, censuses, demographic surveys (such as the world fertility demographic and health surveys).

IV. Recommended data collection methods

- Complete vital registration systems, sample registration systems, and demographic surveillance systems, where they are available, provide good estimates of infant death rates. It should be noted that unless the birth registration system is complete, infant deaths in particular may not be registered. This may seriously bias the indicator estimate.
- Retrospective questions about the survival of children ever born included in censuses and surveys, and are analysed using indirect estimation procedures, are considered to be reliable sources.
- Surveys using maternity histories, in which women are asked to give the date of birth and age of death (if applicable) of each live-born child are used in many household surveys, but care must be taken to avoid age misreporting and to be sure that there is a complete report of infant deaths.

V. Use

Measurement of cause-specific mortality, if at all possible, can serve several purposes:

- to establish the relative public health importance of the different possible determinants or causes of death,

¹ Strictly this is an indicator of *infant death* rather than the *probability of a child dying* before his/her first birthday. The commonly used title is retained so as not to confuse the catalogue users.

- to evaluate trends over time, especially as a method of evaluating the probable impact of intervention programmes,
- to select place and programme interventions.

VI. Recommended format of presentation

Trends in infant mortality should be presented graphically whenever possible.

VII. References

1. The measurement of overall and cause-specific mortality in infants and children. Report of a joint WHO/UNICEF Consultation, 15–17 December 1992. Geneva, World Health Organization, 1992 (Unpublished document WHO/ESM/UNICEF/CONS/92.5)
2. Rustein, SO. The preceding child technique: an evaluation paper. (Paper prepared for UNICEF meeting 6–7 March 1989, New York.)
3. Hill K. Approaches to the measurement of childhood mortality: A comparative review. *Population Index*, 1991, 57(3):368–382
4. *Child mortality since the 1960s*. New York, United Nations, 1992.

A6.2 Under Five Mortality *†

Goal - TO ENSURE SURVIVAL AND HEALTH DEVELOPMENT OF CHILDREN, WITH THE TARGET OF REDUCTION OF INFANT AND UNDER-FIVE CHILD MORTALITY RATE BY ONE-THIRD OR TO 50 AND 70 PER LIVE BIRTHS RESPECTIVELY, WHICHEVER IS LESS BETWEEN 1990 AND THE YEAR 2000. (Source: World Summit for Children)

I. Definition of indicator

Under five mortality rate per 1,000 live births.

Numerator Number of deaths of infants under five years of age, in a given period of time x 1000

Denominator Number of live births in the same period of time

II. Definition of important terms

None

III. Common data sources

Vital registration, sample registration systems, surveillance systems, censuses, demographic surveys (such as the world fertility demographic and health surveys).

IV. Recommended data collection methods

Complete vital registration systems, sample registration systems and demographic surveillance systems, where available, provide good estimates of child mortality. Retrospective questions about the survival of previous children from censuses and surveys, analyzed using indirect estimation techniques are considered reliable sources. Demographic surveys using maternity histories in which women are asked to give the date of birth and age of death (if applicable) of each live-born child, are used in many household surveys. The preceding birth technique used in antenatal clinics, maternity clinics, and at the time of immunization, can provide a useful recent estimate of the probability of dying by age 2, for children of health-service users, at the local level.

V. Uses

Measurement of cause-specific mortality is needed for several purposes:

- a) to establish the relative public health importance of the different causes of death,
- b) to evaluate trends over time, especially as a method of evaluating the probable impact of intervention programmes,
- c) to investigate the circumstances surrounding the deaths of children for devising effective actions to decrease mortality,
- d) to investigate reasons for differing rates of infant and child mortality among geographic areas, and
- e) to evaluate the effectiveness of specific public health interventions in controlled settings

(See reference **Error! Reference source not found.**)

VI. Recommended format of presentation

Trends in under-five mortality should be presented graphically, whenever possible.

VII. References

1. The measurement of overall and cause-specific mortality in infants and children. Report of a joint WHO/UNICEF Consultation, 15–17 December 1992. Geneva, World Health Organization, 1992 (Unpublished document WHO/ESM/UNICEF/CONS/92.5)
2. Hill K. Approaches to the measurement of childhood mortality: A comparative review. *Population Index*, 1991, 57(3):368–382
3. *Child mortality since the 1960s*. New York, United Nations, 1992.

A6.3 Perinatal Mortality

Goal - TO ENSURE SURVIVAL AND HEALTHY DEVELOPMENT OF CHILDREN.
(Source: World Summit for Children)

I. Definition of indicator

Proportion of perinatal deaths per 1 000 total births

Numerator Number of perinatal deaths in a specified period x 1 000

Denominator Number of total births (live births and stillbirths) during the specified period

II. Definition of important terms

- *Perinatal deaths*: deaths in the perinatal period
- *Perinatal period*: The perinatal period commences at 22 completed weeks (154 days) of gestation (the time when birth weight is normally 500g), and ends seven completed days after birth.

III. Common data sources

- Vital registration systems do not usually cover stillbirths. Information on stillbirths may be registered in a special registration system based on a certificate of stillbirth. These two sets of data must therefore be merged for analysis. In their absence, data can be collected in specially designed studies, such as longitudinal community based surveys.
- Routine service based data.

IV. Recommended data collection methods

- Vital registration systems, sample registration systems, and demographic surveillance systems that include live births, stillbirths and deaths within seven days of life provide the necessary data. When using these sources it is important to check the definitions being used for perinatal death and perinatal period.
- Retrospective questions about late pregnancy outcomes and about the survival of children ever born included in censuses and surveys may be used though caution is needed due to problems of perception and recall.
- Survey of service records.

V. Use

The indicator provides a useful measure of care during delivery and the immediate postnatal period and also reflects general maternal health status and pregnancy care.

VI. Recommended format of presentation

The indicator should be presented disaggregated by data source (facility or community), urban-rural, sex and birth weight.

VII. References

4. *International statistical classification of diseases and related health problems*, tenth revision. Volume 2 instruction manual, Geneva, World Health Organization, 1993.
5. *Perinatal mortality*. A listing of available information. Geneva, World Health Organization, 1996 (Unpublished document WHO/FRH/MSM/96.7).

A7.1 Prevalence of Stunting *†

Goal - TO ENSURE CONTINUED IMPROVEMENTS IN NUTRITIONAL STATUS FOR ALL POPULATION GROUPS WITH A TARGET OF REDUCTION OF SEVERE AND MODERATE MALNUTRITION AMONG UNDER-5 CHILDREN BY HALF BETWEEN 1990 AND THE YEAR 2000. (Source: World Summit for Children)

I. Definition of indicator

Proportion of pre-school children (under 5 years of age) below - 2 standard deviations (- 3 standard deviations for **severe stunting**) from the median height-for-age of WHO/NCHS reference population.

Numerator: Number of pre-school children (under 5 years of age) surveyed who are below -2 standard deviations (-3 standard deviations for **severe stunting**) from the median height-for-age of WHO/NCHS reference population.

Denominator: Number of pre-school children (under 5 years of age) surveyed.

II. Definition of important terms

- *Height-for-age:* Height-for-age reflects achieved linear growth and its deficits indicate long-term cumulative health or nutritional inadequacies. Two related terms -- length and stature -- are also used. *Length* refers to measurement in a recumbent (horizontal) position, as often done for children below 2 years of age, who cannot stand well. Standing height measurement is often referred to as *stature*.
- *Z-score or standard deviation value system:* the most preferred measuring system of anthropometric indices. The Z-score system expresses the anthropometric value as a number of standard deviations or Z-scores below or above the reference mean or median value. A fixed Z-score interval implies fixed height or weight differences for children of a given age. For population-based uses, a major advantage is that a group of Z-scores can be subjected to summary statistics, such as the mean and the standard deviation of the Z-scores.
- *World Health Organization/National Centre for Health Statistics (WHO/NCHS) Reference population* is a general guide for individual-based screening and population-based monitoring; it is not intended to be a rigid diagnostic criterion for defining malnutrition. Proper application requires that a number of local and external sources of information be taken into account. If the reference population is utilized in such a flexible manner, a single reference can be used for a wide range of populations with diverse environmental conditions and nutritional status.

III. Common data sources

There are a number of survey programmes which collect anthropometric data. For example, the Demographic and Health Surveys (DHS) funded by USAID, the PAPCHILD Surveys sponsored by the Pan Arab League and UNFPA, and

the World Bank sponsored Living Standard Measurement Study (LSMS) and Social Dimension Adjustment (SDA) surveys in sub-Saharan Africa.

IV. Recommended data collection methods

In general, there are two major approaches to collecting nutritional surveillance information:

- special surveys (one off or repeated), and
- continuous monitoring systems based on anthropometric data from existing programmes.

For reliable assessment of the nutritional status of pre-school children a representative sample of the population of children should be used rather than the children seen at health facilities. National levels of child malnutrition are not expected to change rapidly, except in situations of drought, famine or war. Measurements at the national level should, therefore, be done about every five years. Estimates for smaller geographic areas or population sub-groups may be done more frequently.

V. Use

To measure cumulative deficient growth associated with long-term factors including chronic insufficient dietary intake, frequent infection, poor feeding practices over a sustained period, and possibly low socio-economic status of the household.

VI. Recommended format of presentation

To classify levels of stunting for global monitoring, the prevalence ranges shown in this table are recommended by WHO.

Height-for-age stunting prevalence ranges	
Group	Children below -2 standard deviations from the median
Low	Less than 20%
Medium	20 - 29%
High	30 - 39%
Very high	40% and over

VII. References

1. de Onis M, Monteiro C, Akre J, Clugston G. The worldwide magnitude of protein–energy malnutrition: an overview from the WHO Global Database on Child Growth. *Bulletin of the World Health Organization*, 1993, 71: 703–712.
2. Gorstein J, Sullivan K, Yip R, de Onis M, Trowbridge F, Fajans P, Clugston G. Issues in the assessment of nutritional status using anthropometry. *Bulletin of the World Health Organization*, 1994, 72: 273–283.
3. Waterlow, JC, Buzina R, Keller W, Lane JM, Nichaman MZ, Tanner JM. The presentation and use of height and weight data for comparing the nutritional status of groups of children under the age of 10 years. *Bulletin of the World Health Organization*, 1977, 55:489–498.
4. *Measuring change in nutritional status*. Geneva, World Health Organization, 1983.
5. *Child Malnutrition: progress toward the world summit for children goal*. New York, UNICEF Statistics and Monitoring Section, 1993.
6. World Health Organization Working group. Use and interpretation of anthropometric indicators of nutritional status. *Bulletin of the World Health Organization*, 1986, 64: 929–941.
7. *Physical Status: The use and interpretation of anthropometry. Report of a WHO Expert Committee*. Geneva: World Health Organization, 1995 (WHO Technical Report Series No. 854).

A7.2 Prevalence of Underweight *†

Goal - TO ENSURE CONTINUED IMPROVEMENTS IN NUTRITIONAL STATUS FOR ALL POPULATION GROUPS WITH A TARGET OF REDUCTION OF SEVERE AND MODERATE MALNUTRITION AMONG UNDER-5 CHILDREN BY HALF BETWEEN 1990 AND THE YEAR 2000. (Source: Ninth General Programme of Work and World Summit for Children)

I. Definition of indicator

Proportion of pre-school children (under 5 years of age) below -2 standard deviations (-3 standard deviations for **severe underweight**) from the median weight-for-age of WHO/NCHS reference population.

Numerator: Number of pre-school children (under 5 years of age) surveyed who are below -2 standard deviations (-3 standard deviations for **severe underweight**) from the median weight-for-age of WHO/NCHS reference population.

Denominator: Number of pre-school children (under 5 years of age) surveyed.

II. Definition of important terms

- *Weight-for-age:* Weight-for-age reflects achieved body mass to chronological age. It is influenced by the height of the child (height-for-age) and by its weight (weight-for-height). Its composite nature makes interpretation complex. However, in the absence of significant wasting in a community, the information provided by weight-for-age is similar to that of height-for-age, that is, a reflection of the long-term health and nutrition experience of an individual or population. Short-term change in weight-for-age, especially a reduction, reveals change in weight-for-height.
- *Z-score or standard deviation value system:* the most preferred measuring system of anthropometric indices. The Z-score system expresses the anthropometric value as a number of standard deviations or Z-scores below or above the reference mean or median value. A fixed Z-score interval implies fixed weight differences for children of a given age. For population-based uses, a major advantage is that a group of Z-scores can be subjected to summary statistics, such as the mean and the standard deviation of the Z-scores.
- *World Health Organization/National Centre for Health Statistics (WHO/NCHS) Reference population* is a general guide for individual-based screening and population-based monitoring; it is not intended to be a rigid diagnostic criterion for defining malnutrition. Proper application requires that a number of local and external sources of information be taken into account. If the reference population is utilized in such a flexible manner, a single reference can be used for a wide range of populations with diverse environmental conditions and nutritional status.

III. Common data sources

There are a number of survey programmes which collect anthropometric data. For example, the Demographic and Health Surveys (DHS) funded by USAID, the PAPCHILD Surveys sponsored by the Pan Arab League and UNFPA, and the World Bank sponsored Living Standard Measurement Study (LSMS) and Social Dimension Adjustment (SDA) surveys in sub-Saharan Africa.

IV. Recommended data collection methods

In general, there are two major approaches to collecting nutritional surveillance information:

- special surveys (one off or repeated), and
- continuous monitoring systems based on anthropometric data from existing programmes.

For reliable assessment of the nutritional status of pre-school children a representative sample of the population of children should be used rather than the children seen at health facilities. National levels of child malnutrition are not expected to change rapidly, except in situations of drought, famine or war. Measurements at the national level should, therefore, be done about every five years. Estimates for smaller geographic areas or population sub-groups may be done more frequently.

V. Use

To define the overall magnitude of malnutrition and its changes over time. It does not, however, distinguish between current and more chronic determinants of malnutrition.

VI. Recommended format of presentation

To classify levels of underweight for global monitoring, the prevalence ranges shown in this table are recommended by WHO.

Low weight-for-age prevalence ranges	
Group	Children below -2 standard deviations from the median
Low	Less than 10%
Medium	10 - 19%
High	20 - 29%
Very high	30% and over

VII. References

1. de Onis M, Monteiro C, Akre J, Clugston G. The worldwide magnitude of protein-energy malnutrition: an overview from the WHO Global Database on Child Growth. *Bulletin of the World Health Organization*, 1993, 71: 703-712.
2. Gorstein J, Sullivan K, Yip R, de Onis M, Trowbridge F, Fajans P, Clugston G. Issues in the assessment of nutritional status using anthropometry. *Bulletin of the World Health Organization*, 1994, 72: 273-283.
3. Waterlow, JC, Buzina R, Keller W, Lane JM, Nichaman MZ, Tanner JM. The presentation and use of height and weight data for comparing the nutritional status of groups of children under the age of 10 years. *Bulletin of the World Health Organization*, 1977, 55:489-498.
4. *Measuring change in nutritional status*. Geneva, World Health Organization, 1983.
5. World Health Organization Working group. Use and interpretation of anthropometric indicators of nutritional status. *Bulletin of the World Health Organization*, 1986, 64: 929-941.
6. *Physical Status: The use and interpretation of anthropometry. Report of a WHO Expert Committee*. Geneva: World Health Organization, 1995 (WHO Technical Report Series No. 854).

A7.3 Prevalence of Wasting †

Goal - TO ENSURE CONTINUED IMPROVEMENTS IN NUTRITIONAL STATUS FOR ALL POPULATION GROUPS WITH A TARGET OF REDUCTION OF SEVERE AND MODERATE MALNUTRITION AMONG UNDER-5 CHILDREN BY HALF BETWEEN 1990 AND THE YEAR 2000. (Source World Summit for Children)

I. Definition of indicator

Proportion of pre-school children (under 5 years of age) below -2 standard deviations (-3 standard deviations for **severe wasting**) from the median weight-for-height of WHO/NCHS reference population.

Numerator: Number of pre-school children (under 5 years of age) surveyed who are below -2 standard deviations (-3 standard deviations for **severe wasting**) from the median weight-for-height of WHO/NCHS reference population.

Denominator: Number of pre-school children (under 5 years of age) surveyed

II. Definition of important terms

- *Weight-for-height:* Weight-for-height reflects body proportion and is particularly sensitive to acute growth disturbance. The major components of weight include adipose tissue, lean body mass, bones and fluids. An advantage of weight-for-height is that knowledge of age is not required, which may be difficult to assess in less-developed areas. However, weight-for-height is not a substitute for height-for-age or weight-for-age because each index reflects a different combination of biological processes. Even though they may share determinants, they cannot be used interchangeably.
- *Z-score or standard deviation value system:* the most preferred measuring system of anthropometric indices. The Z-score system expresses the anthropometric value as a number of standard deviations or Z-scores below or above the reference mean or median value. A fixed Z-score interval implies fixed height or weight differences for children of a given age. For population-based uses, a major advantage is that a group of Z-scores can be subjected to summary statistics, such as the mean and the standard deviation of Z-scores.
- *World Health Organization/National Centre for Health Statistics (WHO/NCHS) Reference population* is a general guide for individual-based screening and population-based monitoring; it is not intended to constitute a rigid diagnostic criterion for defining malnutrition. Proper application requires that a number of local and external source of information is taken into account. If the reference populations are used in such a flexible manner, a single reference can be used for a wide range of populations that have diverse environmental conditions and nutritional status.

III. Common data sources

There are a number of survey programmes which collect anthropometric data. For example, the Demographic and Health Surveys (DHS) funded by USAID, the PAPCHILD Surveys sponsored by the Pan Arab League and UNFPA, and the World Bank sponsored Living Standard Measurement Study (LSMS) and Social Dimension Adjustment (SDA) surveys in sub-Saharan Africa.

IV. Recommended Data collection methods

In general, there are two major approaches to collecting nutritional surveillance information:

- special surveys (one-off or repeated); and
- continuous monitoring systems based on anthropometric data from existing programmes.

For reliable assessment of the nutritional status of pre-school children a representative sample of the population of children should be used rather than the children seen at health facilities. National levels of child malnutrition are not expected to change rapidly, except in situations of drought, famine or war. Measurements at the national level should, therefore, be done about every five years. Estimates for smaller geographic areas or population sub-groups may be done more frequently

V. Use

To measure current malnutrition resulting from failure to gain weight or actual weight loss. Wasting could be due to: inadequate food intake, illness or infection, or current poor feeding practices.

VI. Recommended format of presentation

Severity index for malnutrition based on the prevalence of wasting and the mean weight-for-height Z-score for children under 5 years of age.

Classification of severity	Mean weight-for-height Z-score	Percentage of children under -2 s.d. of the median
Acceptable	Greater than -0.40	< 5
Poor	-0.40 to -0.69	5 to 9
Serious	-0.70 to -0.99	10 to 14
Critical	Not more than -1.00	15 and over

VII. References

7. de Onis M, Monteiro C, Akre J, Clugston G. The worldwide magnitude of protein-energy malnutrition: an overview from the WHO Global Database on Child Growth. *Bulletin of the World Health Organization*, 1993, 71: 703–712.
8. Gorstein J, Sullivan K, Yip R, de Onis M, Trowbridge F, Fajans P, Clugston G. Issues in the assessment of nutritional status using anthropometry. *Bulletin of the World Health Organization*, 1994, 72: 273–283.
9. Waterlow, JC, Buzina R, Keller W, Lane JM, Nichaman MZ, Tanner JM. The presentation and use of height and weight data for comparing the nutritional status of groups of children under the age of 10 years. *Bulletin of the World Health Organization*, 1977, 55:489–498.
10. *Measuring change in nutritional status*. Geneva, World Health Organization, 1983.
11. World Health Organization Working group. Use and interpretation of anthropometric indicators of nutritional status. *Bulletin of the World Health Organization*, 1986, 64: 929–941.
12. Physical Status: The use and interpretation of anthropometry. Report of a WHO Expert Committee. Geneva: World Health Organization, 1995 (WHO Technical Report Series No. 854).

A7.4 Low Birth Weight†

Goal - TO ENSURE SURVIVAL AND HEALTHY DEVELOPMENT OF CHILDREN. (Source: World Summit for Children)

I. Definition of indicator

Percentage of live births that weigh less than 2500 grams

Numerator Number of live births weighing less than 2500 grams in a specified period x 100

Denominator Total live births in the specified period

II. Definition of important terms

- *Birth weight*: The first weight of the foetus or new-born obtained after birth, measured within the first hour of life.
- *Low birth weight*: Less than 2500 g (up to and including 2499 g)

III. Common data sources

- Routine service data for deliveries in health facilities.
- Specially designed studies, such as community based surveys.

IV. Recommended data collection methods

Records that include birth weight or surveys where all (or a sample of) babies are weighed at birth during a defined period of time.

V. Use

Low birth weight is an indicator of maternal health, nutrition, and of her genetic stature. It is a proxy measure of the new-born's chance for survival. It is a long term marker of progress towards improved maternal nutrition, health and care.

VI. Recommended format of presentation

The indicator should be disaggregated by rural and urban areas

VII. References

1. *International Statistical Classification of Diseases and Related Health Problems*. Tenth revision. Volume 2 instruction manual. Geneva, World Health Organization, 1993.
2. *Low Birth Weight. A tabulation of available information*. Geneva, World Health Organization, 1992 (Unpublished document WHO/MCH/92.2).

A7.5 Prevalence of Low Mid-Upper-Arm-Circumference (MUAC)-for-age

Goal - TO ENSURE CONTINUED IMPROVEMENTS IN NUTRITIONAL STATUS FOR ALL POPULATION GROUPS WITH A TARGET OF REDUCTION OF SEVERE AND MODERATE MALNUTRITION AMONG UNDER-5 CHILDREN BY HALF BETWEEN 1990 AND THE YEAR 2000. (Source World Summit for Children)

I. Definition of indicator

Proportion of pre-school children (under 5 years of age) below -2 standard deviations (-3 standard deviations for **severe** low MUAC-for-age) from the median MUAC-for-age WHO/NCHS reference population.

Numerator: Number of pre-school children (under 5 years of age) surveyed who are below -2 standard deviations (-3 standard deviations for severe low MUAC-for-age) from the median MUAC-for-age of the reference population.

Denominator: Number of pre-school children (under 5 years of age) surveyed.

II. Definition of important terms

- *MUAC-for-age:* Low mid-upper-arm circumference (MUAC) is, like low weight-for-height (i.e. wasting), particularly sensitive to acute growth disturbances. For that reason, MUAC based on a fixed cut-off, has been used as an alternative indicator of actual nutritional status if the collection of height and weight measurements was difficult, such as during emergencies, famines or refugee crises. However, in 1993, a WHO Expert Committee concluded that age independence is not reflected in the true pattern of mid-upper arm growth, and thus recommended the use of sex-specific MUAC-for-age reference data. These data were developed from a representative sample of children in the USA aged 6-59 months.
- *Z-score or standard deviation value system:* the most preferred measuring system of anthropometric indices. The Z-score system expresses the anthropometric value as a number of standard deviations or Z-scores below or above the reference mean or median value. A fixed Z-score interval implies fixed mid-upper-arm circumference differences for children of a given age. For population-based uses, a major advantage is that a group of Z-scores can be subjected to summary statistics, such as the mean and the standard deviation of the Z-scores.
- *World Health Organization/National Centre for Health Statistics (WHO/NCHS) Reference population* is a general guide for individual-based screening and population-based monitoring; it is not intended to constitute a rigid diagnostic criterion for defining malnutrition. Proper application requires that a number of local and external sources of information are taken into account. If the reference populations are used in such a flexible manner, a single reference can be used for a wide range of populations that have diverse environmental conditions and nutritional status.

III. Data sources

These reference data have only been recently developed and published (see reference 2); the collection of MUAC-for-age data is recommended in cases where the measurements of weight and height are difficult such as during emergencies, famines or refugee crises. The operational advantages of MUAC-for-age include the portability of measuring tapes and the relatively quick measuring procedure. The collection of these data is expected to be included in survey programmes collecting anthropometric data. The reference data will be incorporated in the forthcoming WINDOW version of Epi Info in preparation by CDC, Atlanta.

IV. Recommended data collection methods

In general, there are two major approaches to collecting nutritional surveillance information:

- special surveys (once-off or repeated); and
- continual monitoring systems based on anthropometric data from existing programmes.

For reliable assessment of the nutritional status of pre-school children a representative sample of the population of children should be used rather than the children seen at health facilities. National levels of child malnutrition are not expected to change rapidly, except in situations of drought, famine or war. Measurements at national level should therefore be done every five years. Estimations for smaller geographic areas or population sub-groups may be done more frequently.

V. Use

To measure current malnutrition resulting from failure to gain weight or actual weight loss. Low MUAC-for-age could be due to: inadequate food intake, illness or infection, or current poor feeding practices.

VI. Recommended format of presentation

The proposed severity index for malnutrition based on the prevalence of low MUAC-for-age for children under 5 years of age is as follows:

Classification of severity	Percentage of children below -2 s.d. of the median
Acceptable	< 5
Poor	5 to 9
Serious	10 to 14
Critical	15 and over

VII. References

1. *Physical status: the use and interpretation of anthropometry*. Report of a WHO Expert Committee. Geneva, World Health Organization 1995 (WHO Technical Report Series No. 854)
2. de Onis M, Yip R, and Mei Z. The development of MUAC-for-age reference data recommended by a WHO Expert Committee. *Bulletin of the World Health Organization*, 1997, 75: 11–18.
3. Hall G, Chowdhury S and Bloem M. Use of mid-upper-arm circumference Z-scores in nutritional assessment. *Lancet*, 1993, 341: 1481.
4. Van den Broeck J, Eeckels R and Vuylsteke J. Influence of nutritional status on child mortality in rural Zaire. *Lancet*, 1993, 341: 1491–1495.
5. de Onis M and Habicht JP. Anthropometric reference data for international use: recommendations from a World Health Organization Expert Committee. *American Journal of Clinical Nutrition*, 1996, 64:650–658.

A7.6 Intrauterine Growth Retardation

Goal-

I. Definition of Indicator

Percentage of live births with birth weight below the 10th percentile of the birth-weight-for-gestational-age reference curve.

Numerator: Number of live births with birth weight below the 10th percentile of the birth-weight-for-gestational-age reference curve

Denominator: Total live births in the specified period

II. Definition of important terms

- *Birth weight:* The first weight of the foetus or new-born obtained after birth, measured within the first hour of life.
- *Low birth weight:* Less than 2500 g (up to and including 2499 g)

III. Common data sources

Low birth weight data are obtainable through routine service data for deliveries in health facilities and specially designed studies, such as community based surveys. Assessment of gestational age, a necessary component of the indicator, is often not available in developing countries. Low birth weight has often been used as a proxy for IUGR in these circumstances.

IV. Recommended data collection methods

Records over a defined period of time that include birth weight and gestational age or surveys where all (or a sample of) babies are weighed at birth and their gestational age.

V. Use

Studies have shown that foetuses suffering from growth retardation have higher perinatal morbidity and mortality and are at an increased risk of sudden infant death syndrome. During childhood they are likely to have poor cognitive development and neurologic impairment. In adulthood they at increased risk of cardiovascular disease, high blood pressure, obstructive lung disease, diabetes, high cholesterol concentration and renal damage. The indicator (IUGR > 20% and LBW > 15) is therefore useful for triggering public health action against foetal growth retardation.

VI. Recommended format of presentation

The indicator should be disaggregated by sex and urban/rural areas.

VII. References

13. de Onis M., Blössner M. and Villar J. Levels and patterns of intrauterine growth retardation in developing countries. *European Journal of Clinical Nutrition*, 1998, 52:S1, S5-S15.
14. de Onis M and Habicht J.P. Anthropometric reference data for international use: recommendations from a World Health Organization Expert Committee. *American J of Clinical Nutrition*, 1996, 64: 650-658.
15. *Physical status: the use and interpretation of anthropometry*. Report of a WHO Expert Committee, pp. 121-160. Geneva, World Health Organization, 1995 (WHO Technical Report Series No. 854).

B2.1 HIV Prevalence in Pregnant Women

Goal TO IMPROVE THE HEALTH AND WELL-BEING OF WOMEN.

I. Definition of indicator

Proportion of pregnant women in the age group 15-24 years, attending ante-natal clinics, who are HIV sero-positive according to recommended screening methods.

Numerator: Number of pregnant women aged group 15-24 years, attending ante-natal clinics, who are sero-positive for HIV according to recommended screening methods.

Denominator: Total number of pregnant women in the age group 15-24 years attending ante-natal clinics whose blood has been screened for HIV according to recommended screening methods.

II. Definition of important terms

- The *prevalence of HIV* indicated by the presence of antibody (sero-positivity) covers both HIV-1 and HIV-2.
- *Unlinked anonymous screening* is the testing of specimens for markers of infection after elimination (unlinking) of all personal identifying information from each specimen.
- *ELISA* is Enzyme Linked Immunosorbent Assay

III. Common data sources

Cross-sectional sero-surveys for HIV prevalence among women in the age group 15-24 attending ante-natal clinics.

IV. Recommended Data collection methods

Random sample serological surveys. The method currently proposed is an unlinked anonymous HIV filter paper serological survey of 3000 pregnant women aged 15-24 years from 25-40 urban/peri-urban randomly selected ante-natal clinics. An HIV prevalence survey should only be undertaken if screening of pregnant women for syphilis, at least once during a pregnancy, is an accepted ante-natal care practice in the country. The blood for HIV testing is "leftover" blood originally collected for syphilis screening of pregnant women.

The standard protocol developed by the Centres for Disease Control, Atlanta, USA for HIV assay of filter paper specimens is followed. It requires the use of the genetic Systems ELISA test kit.

All samples positive on the initial ELISA should be assayed on a supplemental ELISA using the Organon Vironostika kit. Only specimens collected from ante-natal clinic attendees aged 15-24 years are HIV tested. Specimens from other age groups should be stored for future possible use.

V. use

The estimation of HIV sero-prevalence is for the purpose of providing evaluation of programme impact. As an indicator of the progressive impact of preventive programmes, it should be repeated from time to time.

VI. Recommended format of presentation

The results should be disaggregated according to factors which would be useful for intervention programmes. For example, by geographical areas. Estimates of HIV prevalence should be given with confidence intervals.

VII. References

1. *Evaluation of a National AIDS Programme: A Methods Package*. 1. Prevention of HIV Infection. Geneva, World Health Organization, 1994 (Unpublished document WHO/GPA/TCO/SEF/94.1.)
2. *Unlinked anonymous screening for the public health surveillance of HIV infections*. Proposed international guidelines. Geneva, World Health Organization, 1989 (Unpublished document GPA/SFI/89.3)
3. Chin, J. Public health surveillance of AIDS and HIV infection. *Bulletin of the World Health Organization*, 1990, 68: 529–536,.

B3.1 Availability of Essential Obstetric Care*

Goal - TO IMPROVE THE HEALTH AND WELL-BEING OF WOMEN, WITH A TARGET FOR ALL PREGNANT WOMEN TO HAVE ACCESS TO PRE-NATAL CARE, SKILLED ATTENDANTS DURING CHILDBIRTH AND REFERRAL FACILITIES FOR HIGH RISK PREGNANCIES AND OBSTETRIC EMERGENCIES BY THE YEAR 2000. (Source World Summit for Children)

I. Definition of indicator

Number of facilities with functioning essential obstetric care per 500,000 population.

II. Definition of important terms

There are two categories of Essential Obstetric Care differentiating availability of care at different levels of the health care system:

- *Basic essential obstetric care services* at the health centre level should include at least the following signal functions (this is not intended to be a complete list of all the interventions that should be offered at the health centre level):
 - parenteral antibiotics
 - parenteral oxytocic drugs
 - parenteral sedatives for eclampsia
 - manual removal of placenta
 - removal of retained products (e.g. manual vacuum aspiration)
 - assisted vaginal delivery (e.g. vacuum extraction)
- *Comprehensive essential obstetric care services* at the district hospital level (first referral level) should include all the above signal functions *plus*
 - surgery,
 - anaesthesia, and
 - blood transfusion.
- *Functioning facilities*: For the services at a facility to be considered functional, one of the elements of care must have been provided during the 6 months previous to data collection.

III. Common data sources

Health services routine statistics are the obvious source of information. Possible means of data collection include maternity reports and health facility surveys.

IV. Recommended data collection methods

The two indicators differentiating the two levels of essential obstetric care coincide with the services that should be available at the **health centre** and at the **district hospital level** (first referral level).

For practical purposes, and to simplify data collection, the definitions have been kept to a minimum of essential components. It is also important to focus

on functioning essential obstetric care facilities rather than those with theoretical capacity.

The standard utilization of 500,000 general population is often used in the construction of health plan indicators. However, to compensate for the fact that populations may have different numbers of annual births, comparative analysis across geographical areas should be conducted in conjunction with crude birth rates.

V. Use

This indicator measures the extent of the availability of health services providing essential obstetric care. It can help programme management at national and sub-national levels to assess the progress being made in extending essential obstetric care to the entire population. It is important for managers to know which districts have no facilities able to provide essential obstetric care and administrative areas with no "potential" facilities that could be rapidly up-graded to provide the essential care. However, it is not necessarily a reflection of accessibility of facilities because it contains no information on the geographical distribution, referral system, transport or cultural and economic accessibility or on the uptake of this care.

VI. Recommended format of presentation

National and sub-national levels as well as urban/rural differentials for national comparisons, but to a lesser extent at international level. Disaggregation between geographical and administrative divisions, by type of facility, and private/public sector are recommended. The indicator should be presented annually.

Mapping is a useful tool for presenting information on distribution of facilities.

VII. References

1. AbouZahr, C and Royston, E. *Maternal Mortality: A Global fact-book*. Geneva, World Health Organization, 1991.
2. *Guidelines for monitoring availability and use of obstetric services*. UNICEF/WHO/UNFPA. 1997.
3. *Care of the mother and baby at the health centre*. Report of a Technical Working Group, 1994. Geneva, World Health Organization, 1994.
4. *Essential elements of obstetric care at first referral level*. Geneva, World Health Organization, 1991.
5. *Indicators to monitor maternal health goals*. Report of a Technical Working Group. Geneva, 8–12 November 1993. Geneva, World Health Organization, 1994.

B3.2 Support to Childbirth *†

Goal - TO IMPROVE THE HEALTH AND WELL-BEING OF WOMEN, WITH A TARGET FOR ALL PREGNANT WOMEN TO HAVE ACCESS TO PRE-NATAL CARE, SKILLED ATTENDANTS DURING CHILDBIRTH AND REFERRAL FACILITIES FOR HIGH RISK PREGNANCIES AND OBSTETRIC EMERGENCIES BY THE YEAR 2000. (Source World Summit for Children and 1987 Safe Motherhood Conference)

I. Definition of indicator

Percentage of births attended by skilled health personnel.

Numerator Births attended by skilled health personnel during a specified period x 100

Denominator Total number of live births during the specified period

[The most commonly used denominator is the number of live births. In theory all births or deliveries in the community should be included. The use of live births will result in an overestimation of the coverage of delivery care.]

II. Definition of important terms

- *Skilled health personnel*: Doctor (specialist or non-specialist), and/or the person with midwifery skills who can manage normal deliveries and diagnose or refer obstetrical complications.
- *Person with midwifery skills*: Person who has successfully completed the prescribed course in midwifery and who is able to
 - give the necessary supervision, care, and advice to women during pregnancy, labour and the postpartum period,
 - conduct deliveries alone, who has life-saving obstetric skills, and
 - care for the new-born and the infant.

The category of "skilled health personnel" should exclude the following, whether or not they have received training:

- The trained traditional birth attendant (TBA) who initially acquired skills by delivering babies through apprenticeship to other TBAs but who has, in addition received a short course of training.
- Any other attendant, including family members designated by an extended family to attend births in that family, and the traditional birth attendant who assists mothers during childbirth and initially acquired her skills by delivering babies herself or through apprenticeship to other TBAs .

III. Common data sources

- Routine health services information which should be improved to include community intervention
- Household survey data.

IV. Recommended data collection methods

Household surveys data are probably the most reliable methods for providing coverage information and for the purpose of disaggregation on type of attendant and non-user characteristics.

V. Use

The purpose of this indicator is to provide information on the actual coverage of assisted deliveries by skilled health personnel. The indicator can be used in programme management at the facility, district, provincial and national levels to monitor the effect of maternal (safe motherhood) programmes on availability and utilization of professional delivery assistance. Programmes should reassess this indicator each year and its effectiveness as a tool for high-risk pregnancy identification and management.

Based on the expectation that deliveries attended by skilled health personnel lead to improved outcome, the indicator may be used as a proxy marker of impact in terms of causes of maternal deaths.

VI. Recommended format of presentation

Disaggregation includes place of delivery and type of skilled health personnel at national level as well as urban/rural differentials for national and international comparisons. Disaggregation at sub-national and administrative levels are useful for national comparisons. The indicator should also be presented according to high risk groups.

When using survey data, absolute numbers and confidence intervals should be reported to indicate the reliability of the indicator. Survey studies should only include the most recent birth for the period of time, to avoid over-representation of women with shorter birth-intervals. Where survey respondents are only women who have had a live birth in the recent past, this will tend to overestimates coverage because only positive outcomes would have been taken into account, women who die, miscarry, have stillbirths or early new-born deaths, having been excluded.

VII. References

1. AbouZahr, C and Royston, E. *Maternal Mortality: A Global fact-book*. Geneva, World Health Organization, 1991.
2. *Coverage of maternity care*. A listing of available information. Geneva, World Health Organization, 1997 (Unpublished document WHO/RHT/MSM/96.28)
3. *Indicators to monitor maternal health goals*. Report of a Technical Working Group. Geneva, 8–12 November 1993. Geneva, World Health Organization, 1994.

B3.3 Access to Prenatal Care

Goal - TO IMPROVE THE HEALTH AND WELL-BEING OF WOMEN, WITH A TARGET FOR ALL PREGNANT WOMEN TO HAVE ACCESS TO PRENATAL CARE, SKILLED ATTENDANTS DURING CHILDBIRTH AND REFERRAL FACILITIES FOR HIGH RISK PREGNANCIES AND OBSTETRIC EMERGENCIES. (Source: World Summit for Children, 1987 Safe Motherhood Conference)

I. Definition of indicator

Percentage of women attended to at least once during pregnancy by skilled health personnel for reasons related to pregnancy.

Numerator Number of pregnant women, in a specified period, attended to by skilled personnel at least once during their pregnancy for reasons related to their pregnancy x 100

Denominator Total number of live births during the specified period

[The number of live births is used as a proxy for the number of pregnant women. Live births, however, underestimate the total number of pregnancies by excluding those which end in stillbirths or spontaneous abortion. It has been suggested that applying a raising factor of 15% to the total number of live births would provide the approximate number of pregnant women in need of care. However, for the purposes of international comparisons and monitoring over time, the denominator should be based on live births.]

II. Definition of important terms

- *Skilled health personnel*: Doctor (specialist or non-specialist), and/or the person with midwifery skills who can manage normal deliveries and diagnose or refer obstetrical complications.
- *Person with midwifery skills*: Person who has successfully completed the prescribed course in midwifery and who is able to
 - give the necessary supervision, care, and advice to women during pregnancy, labour and the postpartum period,
 - conduct deliveries alone, who has life-saving obstetric skills, and
 - care for the new-born and the infant.

The category of *skilled health personnel* should exclude the following, whether or not they have received training:

- The trained traditional birth attendant (TBA) who initially acquired skills by delivering babies through apprenticeship to other TBAs but who has, in addition received a course of training.
- Any other attendant, including family members designated by an extended family to attend births in that family, and the traditional birth attendant who assists mothers during childbirth and initially acquired her skills by delivering babies herself or through apprenticeship to other TBAs .

III. Common data sources

- Routine health services information in combination with estimates of pregnancy rates.
- Household survey data

IV. Recommended data collection methods

Household surveys are probably the most reliable methods for providing coverage information and for determining the characteristics of non-users. Analysis of routine health service information will often lack the private sector data. Care should be taken regarding the definition of *skilled attendant* and data collection methods should include clear explanations of the terminology used to describe different categories of health care workers.

V. Use

The main purpose of the antenatal care coverage indicator is to provide information on the level of antenatal care utilization. A woman is described as receiving antenatal care if she is seen by a skilled attendant at least once during her pregnancy for reasons relating to pregnancy. It is important to note, however, that this operational definition of antenatal care is loose. The number and timing of visits, gestation, the type of care, reasons for seeking care, or the nature or quality of care are not specifically defined. Therefore, since the content of antenatal care varies among countries and is not a single intervention this indicator should only be seen as a proxy of antenatal care utilization.

Identifying geographic areas or populations receiving less coverage can be extremely valuable for identifying and possibly explaining differentials in utilization of maternity care. It may also address the issue of equity of access to maternity care services, for instance between women at low or high risk. Follow-up and referral of women requiring special prenatal and delivery care may be a part of the national safe motherhood strategy

VI. Recommended format of presentation

Disaggregations include place of contact and type of skilled health personnel at national level as well as urban/rural differentials for national and international comparisons. Disaggregation at sub-national and administrative levels are useful for national comparisons. The indicator should also be presented according to high risk groups to ensure attention to equity, and to identify locations needing special attention.

When using survey data, absolute numbers and confidence intervals should be reported to indicate the reliability of the indicator. Survey studies should only include the most recent birth for the period of time, to avoid over-representation of women with shorter birth-intervals.

The proposed change in definition of skilled attendant may create difficulties in comparability over time. It is, therefore, essential to state which definition is used in each instance.

The usefulness of the indicator would be enhanced if disaggregated by number and timing of visits.

VII. References

4. AbouZahr, C and Royston, E. *Maternal Mortality: A Global fact-book*. Geneva, World Health Organization, 1991.
5. *Coverage of maternity care*. A listing of available information. Geneva, World Health Organization, 1997 (Unpublished document WHO/RHT/MSM/96.28)
6. *Indicators to monitor maternal health goals*. Report of a Technical Working Group. Geneva, 8–12 November 1993. Geneva, World Health Organization, 1994.
7. *Monitoring Reproductive Health: Selecting a short list of national and global indicators*. Geneva, World Health Organization, 1997 (Unpublished document WHO/RHT/HRP/92.26)
8. Guide to National and Local Reproductive Health Indicators. *The Family Planning Manager* (Supplement) Vol. VI, Number 2, 1997.

B3.5 Contraceptive Use Prevalence *†

Goal - TO ENSURE HEALTHY POPULATION DEVELOPMENT, WITH A TARGET FOR INDIVIDUALS OR ALL COUPLES TO HAVE ACCESS TO INFORMATION AND SERVICES TO PREVENT PREGNANCIES THAT ARE TOO EARLY, TOO CLOSELY SPACED, TOO LATE OR TOO MANY. (Source World Summit for Children)

I. Definition of indicator

Percentage of women of reproductive age who are using (or whose partner is using) a contraceptive method at a given point in time.

Numerator Number of women of reproductive age at risk of pregnancy who are using (or whose partner is using) a contraceptive method in a specified period x 100

Denominator Number of women of reproductive age at risk of pregnancy in the specified period

II. Definition of important terms

- *Women of reproductive age*: refers to all women aged 15-49.
- *At risk of pregnancy*: refers to women who are sexually active, not infecund, pregnant or amenorrhoeic. Technically speaking this should

relate to the population at risk of pregnancy, however, in practice information is generally obtained of women who are either currently married or in union.

- *Contraceptive method*: These are modern forms of contraception which include female and male sterilization, injectable and oral contraceptives, intrauterine devices, sub-dermal implants, barrier methods (male and female), as well as natural family planning, traditional methods and lactational amenorrhoea where this is cited as a method.

III. Common data sources

- Routine service data on acceptance and continuation including information from public and private sources, community based services and NGOs.
- Contraceptive prevalence surveys.

IV. Recommended data collection methods

- Analysis of routine family planning (child spacing) service data.
- Standardized contraceptive prevalence surveys which are preferred because they eliminate the problems of double counting and omission of the private sector data.

It is important to ensure that young people and couples, independent of their marital or union status, are included where possible.

V. Use

The indicator is useful as a measure of use of contraception methods. It is also relevant at all levels of the health system for the assessment of the coverage of contraceptive services, and the effect of health education and to some extent the quality of service. Preference for methods and sources can be tracked and related to continuation and contraceptive failure rates

VI. Recommended format of presentation

Indicating whether the information relates to all women who are at risk of pregnancy or to women who are married or in union, the indicator should be disaggregated by type of modern contraceptive method as well as information on natural family planning and traditional methods.

Age-specific current use of contraceptives can be calculated for any age-group if the women's ages are recorded.

VII. References

1. Shah, I.H. The advance of the contraceptive revolution. *World Health Statistical Quarterly*, 1994 Vol. 47, No. 1.
 2. *Levels and Trends of Contraceptive Use as Assessed in 1994*. New York, United Nations 1996 (Document ST/ESA/SER.A/146 of the Department of Economic and Social Information and Policy Analysis)
 3. *Contraceptive Method Mix. Guidelines for policy and service delivery*. Geneva, World Health Organization, 1994.
 4. Guide to National and Local Reproductive Health Indicators. *The Family Planning Manager* (Supplement) Vol. VI, Number 2, 1997.
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B3.6 Maternal Mortality ^{*†}

Goal - TO IMPROVE THE HEALTH AND WELL-BEING OF WOMEN WITH A TARGET OF REDUCTION OF THE MATERNAL MORTALITY RATIO BY HALF BETWEEN 1990 AND THE YEAR 2000. (Source: World Summit for Children, 1987 Safe Motherhood Conference)

I. Definition of indicator

Maternal mortality ratio per 100 000 live births.

Numerator: Maternal deaths in a year x 100 000

Denominator: Total live births in the year

II. Definition of important terms

- *Maternal death:* The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. Maternal deaths should be divided into two groups:
- *Direct obstetric deaths* are those resulting from obstetric complications of the pregnant state (pregnancy, labour and the puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from the above.
- *Indirect obstetric deaths* are those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but was aggravated by physiologic effects of pregnancy.

The ICD-10 includes two further definitions of maternal mortality:

- *Late maternal death:* The death of a woman from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy.
- *Pregnancy-related death:* The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death.

The definition of pregnancy-related death is irrespective of cause of death and therefore includes incidental and accidental causes. This avoids the determination of pathogenic causes of death, and therefore the need for strong clinical inputs during data collection. In countries where maternal mortality is high the bias introduced by the inclusion of external causes is usually low and simplifies data collection.

III. Common data sources

Routine data sources (civil registration) of death. It is recommended that countries adopt the notification of pregnancy status on death certificates. Care is needed with regard to the attribution of causes of death. Many maternal deaths are misclassified either because the death was wrongly

ascribed to another, non-maternal cause or because the pregnancy status of the woman was not known.

Survey-based information (reproductive age mortality survey, community-based case finding, sisterhood method).

IV. Recommended data collection methods

Routine death notification when available, or community-based information including sisterhood surveys. Data collection methods that rely on household surveys require large sample sizes particularly where direct estimation techniques are employed. As a result, the estimates typically have wide confidence intervals. Where indirect estimation techniques are used (as in the sisterhood method, for example) sample size requirements are smaller though the method provides only a retrospective estimate (usually some 10 years prior to the survey).

Hospital maternal mortality ratios are non-interpretable, except at national level if all births and deaths take place in hospitals and are properly classified.

It can be anticipated that recording late maternal death becomes more important the more developed a country is because women with severe complications can be kept alive for longer.

However, because most data collection methodologies (in particular household surveys) have wide margins of error, it is not advisable to collect maternal mortality data using these methods more often than once every 5–10 years. It is essential to state which definition is used.

V. Use

The absolute number of maternal deaths, while not strictly speaking an indicator, nonetheless provides important information for health managers. The first use of a report of a maternal death is to trigger an investigation of the causes of death, and to determine whether there were defects in the care process which need correction. Many countries are conducting maternal death audits both within care facilities and in the communities.

At higher levels of the health system (provincial, regional and national) both the number of deaths and the maternal mortality ratio can provide a means to monitor the trend in maternal health and service performance and to identify geographic areas and population groups which require more focused service attention and resources.

Considerable care is needed in interpreting trends in maternal mortality, particularly at regional and local levels and in countries with small populations where absolute numbers of maternal deaths are likely to be relatively small, even when maternal mortality ratios are high. In these circumstances, random fluctuations in the ratio may render trend assessment difficult.

There are also difficulties in interpreting maternal mortality ratios derived from community-based surveys because the estimates are bound to have very wide confidence intervals.

Because of problems such as these WHO, UNICEF and UNFPA recommend a series of process indicators that can be used by programmes to monitor progress towards ensuring the availability and use of obstetric services for the management of complications (reference 8).

VI. Recommended format of presentation

To facilitate the interpretation of the data, whenever possible, additional information should be provided on place of death, age, parity, the number of deaths, definitions of numerator and denominator, reference year and time-period, definition of population, source of data (including if different sources have been used for the numerator and denominator) as well as any information on the level of coverage of reporting.

The number of maternal deaths should be disaggregated at sub-national level by geographic area, age and parity of the deceased mothers whenever the denominator is large enough for such disaggregation. Where the data permit, maternal mortality ratios can provide useful information about inequities between different population groups, for example, the very poor, minority groups etc

VII. References

1. AbouZahr, C. and Royston, E. *Maternal Mortality: A Global fact-book*. Geneva, World Health Organization, 1991.
2. *Maternal mortality. Rates and ratios. A tabulation of available information*. Third edition. Geneva, World Health Organization, 1991 (Unpublished document WHO/MCH/MSM/91.6).
3. *Indicators to monitor maternal health goals*. Report of a Technical Working Group. Geneva, 8–12 November 1993. Geneva, World Health Organization, 1994.
4. *International Statistical Classification of Diseases and Related Health Problems*. Tenth Revision, Vol. I. Geneva, World Health Organization, 1992.
5. Graham, W., Brass, W. and Snow R.W. Estimating maternal mortality: the sisterhood method. *Studies in Family Planning*, 1989, 20(3): 125–135.
6. Ireland, J. and Graham, W. Conducting a case review of maternal deaths. (Draft, January 1966).
7. *Verbal autopsies for maternal deaths*. Report of a WHO workshop, 10–13 January 1994. Geneva, World Health Organization, 1995 (Unpublished document WHO/FHE/MSM/95.15).
8. *Guidelines for monitoring the availability and use of obstetric services*. Geneva, World Health Organization, 1997 (Unpublished document UNICEF/WHO/UNFPA).
9. *Selecting reproductive health indicators: A guide for district managers*. Geneva, World Health Organization, 1997 (Unpublished document RHT/HRP/97.25).
10. *Monitoring reproductive health: Selecting a short list of national and global indicators*. Geneva, World Health Organization, 1997 (Unpublished document RHT/HRP/97.26).
11. *Reproductive health indicators for global monitoring: Report of an interagency technical meeting, 9 –11 April 1997*. Geneva, World Health Organization, 1997 (Unpublished document RHT/HRP/97.27).

B3.7 Prevalence of Anaemia in Women^{††}

Goal - TO ENSURE CONTINUED IMPROVEMENTS IN NUTRITIONAL STATUS FOR ALL POPULATION GROUPS, WITH A TARGET OF REDUCTION OF IRON DEFICIENCY ANAEMIA IN WOMEN BY ONE THIRD OF THE 1990 LEVELS. (Source: World Summit for Children)

I. Definition of indicator

Percentage of women of reproductive age (15–49) screened for haemoglobin levels, with levels below 110g/l for pregnant women, and 120g/l for non-pregnant women.

Numerator Number of women of reproductive age (15-49) screened for haemoglobin levels with levels below 110g/l for pregnant women, and 120g/l for non-pregnant women during a specified period x 100

Denominator Total number of women of reproductive age (15-49) screened for haemoglobin levels during the specified period.

II. Definition of important terms

- *Anaemia* is a disorder characterized by a blood haemoglobin concentration lower than the defined optimal level, and is usually associated with a decrease in the circulating mass of red blood cells. In underprivileged environments, iron deficiency accounts for most of the anaemia, but there may be other possible causes, in particular malaria, schistosomiasis, hookworm infestation, haemorrhage in childbirth, or trauma, and anaemia due to other nutrient deficits, e.g. vitamins A, C, B12 and folic acid.
- *Iron-deficiency anaemia* is defined as a condition where there are no mobilizable iron stores and where signs of a compromised supply of iron to tissue are noted. The more severe stages of deficiency are associated with anaemia, a subset of iron deficiency. Because anaemia is the most common indicator used to screen for iron deficiency the terms anaemia, iron deficiency, and iron deficiency anaemia are sometimes used interchangeably.
- *Haemoglobin* is the red pigment present in solution in the red corpuscles of the blood; its primary function is to transport oxygen to all parts of the body. Iron, folic acid and other vitamins and trace elements are all required for the formation of haemoglobin, which occurs in the bone marrow.
- *All women*: includes pregnant, non-pregnant and lactating.

There is no single haemoglobin value that will separate all anaemic from all non-anaemic or all nutritionally deficient from all nutritionally sufficient individuals, because what is normal for one individual may not be so for another. The percentage below a certain cut-off point, or index value, can, however identify the population that is likely to be deficient.

Anaemia is most commonly detected by measuring haemoglobin (the iron-carrying part of red blood cells) or by determining the haematocrit (the

volume of red blood cells in a specified amount of blood). Levels of haemoglobin and haematocrit below which anaemia is considered to be present are given in the following table.

Age/sex group	Haemoglobin below *		Haematocrit (l/l) below
	g/l	mmol/l	
Children 6 months to 5 years	110	6.83	0.33
Children 5-11 years	115	7.13	0.34
Children 12-14 years	120	7.45	0.36
Non-pregnant women	120	7.45	0.36
Pregnant women	110	6.83	0.33
Men	130	8.07	0.39

* Conventional conversion factors: 100g/l Hb = 6.2 mmol/l, and 0.30 l/l Haematocrit

III. Common data sources

Routine maternal records in health service facilities; special population-based assessments or surveys.

IV. Recommended data collection methods

Review and extraction of data from antenatal records for status of pregnant women. Records that include haemoglobin values or surveys where women are tested for haemoglobin.

V. Use

The initial use of the indicator is to identify women who are experiencing anaemia and need treatment and other care. Thus, action is taken at the case level, normally by the care providers who detect the deficiency.

Population-based assessments may be useful for:

- determining the prevalence of anaemia and iron deficiency in the community,
- identifying high risk or highly affected populations for intervention,
- monitoring and evaluating progress in an anaemia prevention programme,
- measuring progress toward elimination of anaemia,
- a basis for advocacy, and
- support of prevention programmes.

VI. Recommended format of presentation

Indicating the source of data (clinical records or survey) as well as the method for assessing anaemia, the indicator should be disaggregated by pregnant, non-pregnant and lactating women level of anaemia: severe, moderate, mild (in pregnant women these are generally defined as being <70, 70-99, 100-109 g/l); pregnancy trimester rural and urban areas.

When dealing with skewed distributions such as those of haemoglobin levels it is more meaningful to use the median as a summary statistic. However, conventionally, the mean and standard deviation should be reported.

For comparative purposes cut-off levels for haemoglobin and haematocrit should be adjusted upwards for people living at higher altitude and for those who smoke (reference 1).

VII. References

1. *Iron deficiency: indicator for assessment and strategies for prevention. Based on a WHO/UNICEF/UNO Consultation.* Geneva, World Health Organization, 1996 (Unpublished document WHO/NUT/96.12).
2. *The prevalence of anaemia in women: a tabulation of available information.* Geneva, World Health Organization, (Unpublished document Maternal Health and Safe Motherhood Program, Division of Family Health).
3. DeMaeyer, E.M. et al. *Preventing and controlling iron deficiency anaemia through primary health care.* A guide for the health administrators and programme managers. Geneva, WHO World Health Organization, 1989.
4. *Anemia detection in health services. Guidelines for program managers.* Seattle, WA, USA. Program for Appropriate Technology (PATH), 1996.
5. Micronutrients for the health of women and newborns. *MotherCare Matters* 6(1): 1-11, 1996.
6. Report of the African Regional Consultation on control of anaemia in pregnancy. Brazzaville, Congo. World Health Organization. Regional Office for Africa, 1989.

C1.1 Blood Donor Screening

Goal - TO ENSURE UNIVERSAL ACCESS TO AN AGREED UPON SET OF ESSENTIAL HEALTH CARE AND SERVICES

I. Definition of indicator

Percentage of voluntary non remunerated donations from low-risk blood donors

Numerator Number of blood donations from voluntary non-remunerated low-risk blood donors x 100

Denominators Total number of blood donations

II. Definition of important terms

- *Blood donation*: the collection of a unit of blood, usually about 450 ml.
- *Family replacement donation (FRD)*: a blood donation given by a family member or friend of recipient - often a source of “hidden” paid donor system.
- *Low-risk blood donors*: donors who are healthy, are not on contra-indicated medication, are not IV drug users and whose sexual behaviour does not place them at risk for transmitting infections such as HIV, hepatitis viruses and other viruses through their donated blood.
- *Paid donors*: donors who donate their blood in exchange for money or other incentives which have monetary value.
- *Voluntary non remunerated donors (VNRD)*: blood donations given for altruistic reasons without receiving monetary gain or inducement which would affect the health of the donors or recipients.

III. Common data sources

Data are obtainable from blood transfusion service records.

IV. Recommended data collection methods

The data are collected by reviewing routine records of the blood transfusion service and donor recruitment records.

V. Use

The indicator is used to measure the level of low-risk blood donors. An effective and sustainable safe blood supply system depends on the recruitment and retention of motivated blood donors who are “self-screened” and are screened by the blood transfusion services. The ultimate aim of maintaining a roster of low-risk blood donors is to prevent transmission of diseases which are transmissible through blood and blood products.

VI. Recommended format of presentation

The indicator should be presented for:

- voluntary non-remunerated donors *excluding* family replacement donors; and
- voluntary non-remunerated donors *including* family replacement donors.

This presentation of the indicator is important because many family replacement donation systems lead to a hidden paid donor system.

Total number of blood donations	Percent of VNR donations (not including FRD)	Percentage of VNR donations including FRD

VII. References

1. World Health Assembly resolution WHA 28.72 (May 1975).
2. *Recruiting Educating and Retaining Safe Blood Donors*. Geneva, World Health Organization, 1995 (Unpublished document WHO/GPA/BLS/95.1).
3. *Global Blood Safety Initiative. Consensus statement on how to achieve a safe and adequate blood supply by recruitment and retention of voluntary, non-remunerated blood donors*. Geneva 8–11 April, 1991. Geneva, World Health Organization, 1993 (Unpublished document WHO/LBS/93.2).
4. *Guidelines for Blood Donor Counselling on Human Immunodeficiency Virus (HIV)*. Geneva, World Health Organization, 1994 (Unpublished document IFRCRCS/WHO)

C1.2 Use of Blood

Goal - TO ENSURE UNIVERSAL ACCESS TO AN AGREED UPON SET OF ESSENTIAL HEALTH CARE AND SERVICES

I. Definition of indicator

Proportion of blood transfusions which are medically justified based on national criteria and guidelines.

Numerator Number of units of blood transfused which are medically justified according to the national criteria and guidelines, in a sample of blood transfusions

Denominator Total number of blood transfusions given.

II. Definition of important terms

- *Medically justified blood transfusion:* Blood transfusions given to prevent death or serious morbidity when alternatives are not appropriate.
- *National criteria:* guidelines designed to assist in decision making for transfusion of blood and blood products.
- *Window period:* the period of time between infection and appearance of detectable antibodies (3-6 weeks for HIV) during which period blood may be infectious but screen as negative.

III. Common data sources

The data are obtainable from medical records in health facilities.

IV. Recommended data collection methods

Data are collected by sampling records of total blood transfusion given. A review of the criteria used for justifying the transfusion in the medical records and patient treatment notes will be matched with the national criteria and guidelines for transfusion.

V. Use

The indicator is a measure of the level of use of screened blood for transfusion. It is also a measure of the development and dissemination of national guidelines for blood transfusion and compliance with those guidelines. Even when all the blood transfused is screened for transfusion transmissible infections the total number of blood transfusion should be reduced to conform to the appropriate usage in order to minimize unnecessary transfusion and to reduce disease transmission through blood transfusion.

VI. Recommended format of presentation

Total number of blood units transfused (A)	Number of blood units transfused conforming to national guidelines (B)	Total number of blood units inappropriately transfused (A-B)

VII. References

1. *Global Blood Safety Initiative*. Use of plasma substitutes and plasma in developing countries. Geneva, 20–22 March 1989. Geneva, World Health Organization, 1989 (Unpublished document WHO/GPA/INF/89.17, or WHO/LAB/89.9).
2. *Global Blood Safety Initiative*. Guidelines for the appropriate use of blood. Geneva 2–5 May 1989. Geneva, World Health Organization, 1989 (Unpublished document WHO/GPA/INF/89.18, or WHO/LAB/89.10).
3. *Global Blood Safety Initiative*. Autologous transfusion in developing countries. Geneva 10–12 December 1990. Geneva, World Health Organization, 1991 (Unpublished document WHO/GPA/INF/91.1, or WHO/LAB/91.2).

C1.3 Blood Donations Screening

Goal - TO ENSURE UNIVERSAL ACCESS TO AN AGREED UPON SET OF ESSENTIAL HEALTH CARE AND SERVICES

I. Definition of indicator

Percentage of donated blood screened for transfusion transmissible infections (TTI) during a specified period of time

Numerator Number of blood units that have been screened for TTIs during a specified period of time x 100

Denominator Total number of units of blood donated during a specified period of time

II. Definition of important terms

- *Transfusion Transmissible Infections (TTI)*: all infectious agents that can be transmitted by transfusion of infected blood or blood products. The major TTIs include:
 - HIV Human Immunodeficiency Virus
 - HBV Hepatitis B virus
 - HCV Hepatitis C virus
 - Syphilis Spirochaete, sexually transmitted disease
 - Chagas' *Trypanosome cruzi*, infection common in Latin America.

III. Common data sources

Data are obtainable from health facilities and blood transfusion service records.

IV. Recommended data collection methods

Data are collectable by reviewing the records of health facilities for information on blood transfusion and records of blood transfusion services for the screening of the blood for HIV, hepatitis B and hepatitis C. Other TTIs may be included, such as Chagas', depending on the geographic region.

V. Use

The indicator is useful for measuring safety of blood transfusion, and thus the quality of health care in general. It also provides, indirectly, information on the effectiveness of the distribution of appropriate test kits for TTI, and compliance with national recommendations to screen all blood for transfusion.

VI. Recommended format of presentation

The indicator should be presented for the different types of TTI such as HIV, hepatitis B and C screened by geographic regions.

Total number of blood donations	Percentage of donations tested for				
	HIV antibodies	hepatitis B surface antigen (HBsAg)	hepatitis C antibodies	syphilis	Other infections

VII. References

1. *Global Blood Safety Initiative*. Consensus statement on screening of blood donors for infectious agents transmissible through blood transfusion. Geneva 30 January – 1 February, 1990. Geneva, World Health Organization, 1991 (Unpublished document WHO/LBS/91.1).
2. UNAIDS. Revised recommendations for the selection and use of HIV antibody tests, WHO/UNAIDS, revised 1997. *WHO Weekly Epidemiological Record*, No. 72, 1997.
3. *Guidelines for Organizing National External Quality Assessment Schemes for HIV Serological Testing*. Geneva, UNAIDS, 1996 (Unpublished document UNAIDS/96.5).

C4.1 Disability

Goal - To REDUCE AVOIDABLE DISABILITIES THROUGH APPROPRIATE PREVENTIVE AND REHABILITATIVE MEASURES. (Source World Summit for Children)

I. Definition of Indicator:

The proportion of persons with disabilities (per 1000 population) of a duration of at least 6 months or of an irreversible nature.

Numerator: Number of people with a (specific) disability, lasting at least 6 months, among those surveyed x 1000

Denominator: Number of people in the surveyed population

II. Definition of important terms

- *Impairment:* loss or abnormality of psychological, physiological or anatomical structure or function (awareness of symptoms and signs at the organ or function level).
- *Disability:* any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being (objective alteration of behaviour or performance at the level of the individual).
- *Handicap:* a disadvantage for a given individual resulting from an impairment or a disability, that limits or prevents the fulfilment of a role that is normal (depending on age, sex and social and cultural factors) for that individual (level of social interaction).

The following guidance may be used to determine whether an individual has a disability or a handicap:

- *Difficulty in seeing* includes persons with different levels of difficulty seeing, not only persons who are completely blind
- *Difficulty hearing/speaking* includes persons with different levels of difficulty hearing and/ or speaking, not only persons who are completely deaf or completely unable to speak
- *Difficulty moving* includes persons who have difficulty moving the limbs and trunk, or difficulty moving from place to place
- *Difficulty learning, comprehending or remembering* includes persons who are not able to learn, comprehend or remember as well as other persons their age
- *Difficulty performing activities because of emotional disorder or strange behaviour* includes persons who have difficulty carrying out conventional activities due to strange behaviours

III. Common data source

Data on the numbers of persons with disability may come from a national census; surveys such as demographic and health, or disability surveys; official registries; or services data from hospitals, schools or community based rehabilitation programmes.

Data on the number of persons with impairments may come from surveys or mass screening, such as those for visual or hearing impairments.

IV. Recommended Data collection methods

Population-based community surveys and screening are the most common ways of collecting data on disability. Surveys may be supplemented by national census reports.

V. uses

Countries may use data on impairments and on disabilities for planning and assessing prevention and rehabilitation programs. Both impairments and disability data may also be used to measure trends. The nature of the primary disability should be specified as:

- seeing
- hearing/speaking
- moving
- learning/comprehending/remembering
- performing activities because of emotional disorder/strange behaviour, or other disabilities.

VI. Recommended format of presentation

The total number of persons with disabilities should be presented as well as the proportion per 1,000 children aged 0-4, 5-14 15-59 and adults 60 and over.

Data on type of disability and the indicators should be disaggregated by age group (0-4, 5-14, 15-59, 60 and over), location (urban, rural) and sex.

VII. References

[For guidelines for questions on disability in censuses or surveys contact United Nations Statistical Office, 2 United Nations Plaza, New York, NY 10017, USA Fax 01-212-963-4116.

For guidelines on methods for identifying seeing or hearing impairments, contact Director, Programme for the Prevention of Blindness and Deafness, World Health Organization Headquarters, Geneva.

For guidelines on methods of data collection on disabilities or impairments resulting from mental disorders, including mental retardation, contact Director, Department of Mental Health and Substance Dependence, World Health Organization Headquarters, Geneva.]

C6.1 Access to Safe Drinking Water*†

Goal - TO ENABLE UNIVERSAL ACCESS TO SAFE AND HEALTHY ENVIRONMENTS AND LIVING CONDITIONS

TO ENABLE UNIVERSAL ACCESS TO SAFE DRINKING WATER. (Source: World Summit for Children)

• Definition of indicator

Proportion of population *with access* to an *adequate amount* of *safe drinking water* in a dwelling or located within a *convenient distance* from the user's dwelling.

Numerator: Proportion of population *with access* to an *adequate amount* of *safe drinking water* in a dwelling or located within a *convenient distance* from the user's dwelling.

Denominator: Total population.

• Definition of important terms

- Access to safe water: access to safe and adequate supply of water either in the dwelling or within a convenient distance from the dwelling
- Safe water: Water which does not contain biological or chemical agents directly detrimental to health. "Safe water" includes treated surface waters, and untreated but uncontaminated waters such as from protected springs, bore-holes, and sanitary wells.
- Adequate amount of water: A continuous supply of water, sufficient to meet the needs of the user for drinking and hygiene. The minimum volume required may be defined as twenty litres of safe water per person per day.
- Convenient distance: May be defined as 15 minutes' walking distance either way, or less than 1 kilometre. Convenient distance and access are distinct in the sense that there may be access to water but it is not necessarily convenient to fetch the water due to distance.
- Access to, adequate amount, safe water supply and convenient distance are levels of acceptability that differ from country to country and hence should be defined by the countries themselves. If no definition is available, the above definitions may be used.

• Common data source

In order to arrive at more accurate estimates of water coverage, two main data sources are required:

- administrative data that report on new and existing facilities;
- population-based data derived from some form of household survey and/or monitoring exercise as well as national census, etc.

- **Recommended data collection methods**

- Review of administrative reports of sectors responsible for water development and supply,
- Population-based surveys,
- Access to sector monitoring databases.

- **Use**

The indicator is a measure of coverage of the population with water supply. As a *determinant* indicator it should be interpreted in conjunction with the distribution of water-borne diseases.

- **Recommended format of presentation**

The indicator should be disaggregated by geographical area, urbanization (urban, peri-urban, marginal urban, rural) and by type of water source.

- **References**

1. *National and global monitoring of water supply and sanitation*. Geneva, World Health Organization, 1982 (Unpublished document CWS Series of Co-operative Action for the Decade, No. 2)
2. Water supply and sanitation sector monitoring report. (WSSMR), 1990. World Health Organization/UNICEF Joint Monitoring Programme.
3. *Environmental health indicators: Framework and methodologies*. Geneva, World Health Organization, 1999 (Unpublished document WHO/SDE/OEH/99.10)

C6.2 Access to Adequate Sanitary Means and Excreta Disposal*†

Goal - TO ENABLE UNIVERSAL ACCESS TO SAFE AND HEALTHY ENVIRONMENTS AND LIVING CONDITIONS

UNIVERSAL ACCESS TO SANITARY MEANS OF EXCRETA DISPOSAL. (Source: World Summit for Children)

I. Definition of indicator

Proportion of population *with access* to an adequate *sanitary facility* for human excreta disposal in the dwelling or located within a *convenient distance* from the user's dwelling.

Numerator: Population *with access* to an adequate *sanitary facility* for human excreta disposal in the dwelling or located within a *convenient distance* from the user's dwelling.

Denominator: Total population.

II. Definition of important terms

- *Adequate excreta disposal facility:* A facility which provides for the controlled disposal of human excreta in ways which avoid direct human contact with faeces or contamination of food or water supply by raw faeces.
- *Convenient distance:* A maximum of 50 metres from the dwelling.
- *Sanitary facility:* Facilities for human excreta disposal, i.e.:
 - water flush toilet connected to sewage system
 - water flush toilet connected to a septic tank
 - pour flush latrine
 - covered dry latrine
 - uncovered latrine, or
 - no latrine.

III. Common data source

In order to arrive at more robust estimates of sanitary and excreta disposal coverage, two main data source types are required. First, administrative or infrastructure data which report on new and existing facilities. Second, population-based data derived from household surveys and/or monitoring exercise as well as national census, etc.

IV. Recommended data collection methods

- *Review of administrative reports of sectors responsible for sanitary works*
- *Population-based surveys*
- *Access to sector monitoring databases*

V. Use

The indicator is a measure of coverage of the population with appropriate excreta disposal and sanitary facilities. As a *determinant* indicator it should be interpreted in conjunction with the distribution of diseases of poor sanitation.

VI. Recommended format of presentation

The indicator should be disaggregated by geographical area, urbanization (urban, peri-urban, marginal urban, rural) and by type of sanitary facilities.

VII. References

1. World Health Organization. *National and global monitoring of water supply and sanitation*. CWS Series of Co-operative Action for the Decade, No. 2, 1982.
2. World Health Organization/UNICEF Joint Monitoring Programme. *Water supply and sanitation sector monitoring report*. (WSSSMR), 1990.
3. *Environmental health indicators: Framework and methodologies*. Geneva, World Health Organization, 1999 (Unpublished document WHO/SDE/OEH/99.10)

C7.1 Quality of Drugs

Goal - TO ENSURE UNIVERSAL ACCESS TO AN AGREED UPON SET OF ESSENTIAL HEALTH CARE AND SERVICES OF ACCEPTABLE QUALITY

I. Definition of indicator

Proportion of essential drugs beyond the expiry date out of the total number of essential drugs surveyed.

Numerator: Number of essential drugs beyond the expiry date

Denominator: Total number of essential drugs surveyed.

II. Definition of important terms

- *Basket of drugs:* Drugs selected from among the essential drugs which are most used in the country. They should also be selected on the basis of their general usefulness, affordability for the majority of the population and wide availability internationally.

III. Common data sources

The data for the numerator should be collected through a survey of drug outlets. The data for the denominator should be decided during the design of the survey. The drugs to be surveyed should have the same characteristics as those in the “basket of drugs”.

IV. Recommended Data collection methods

Reference Geneva, World Health Organization, 1994 (Unpublished document WHO/DAP/94.12 gives a model for sampling drug outlets and data collection forms.

V. Use

To assess the attainment of one of the objectives of a national drug policy, which is to provide drugs of quality anywhere in the country. The fact that patients can find drugs within the expiry date in any health facility or drug outlet is a good indicator of the success of the national drug policy and the effectiveness of its quality system.

The indicator can also be used to assess the performance of the quality assurance system and the management of drugs at various levels. If quality assurance system is operational, and if drugs are well managed, they should be within expiry date. The indicator can help managers in the facilities and the drug outlets and their supervisors at regional and national levels become aware of problems and take corrective action.

The indicator can further be used to measure the quality of drugs in the public and private sector together or separately.

VI. Recommended format of presentation

None

VII. References

1. *Indicators for Monitoring National Drug Policies*. A practical manual. Geneva, World Health Organization, 1994 (Unpublished document WHO/DAP/94.12)
2. *How to Investigate Drug Use in Health Facilities*. Selected drug use indicators. Geneva, World Health Organization, 1993 (Unpublished document WHO/DAP/93.1).

C7.2 Availability of Essential Drugs*†

Goal - TO ENSURE UNIVERSAL ACCESS TO AN AGREED UPON SET OF ESSENTIAL HEALTH CARE AND SERVICES OF ACCEPTABLE QUALITY

I. Definition of indicator

Average stock-out duration for a basket of drugs in a sample of remote facilities in the last year, out of average stock-out duration for the same basket in the past three years.

Numerator: Average stock-out duration for a basket of drugs in a sample of remote facilities in the last year.

Denominator: Average stock-out duration for the same basket in the past three years

II. Definition of important terms

- *Stock-out duration:* Number of days/weeks/months when drugs of the basket are out of stock. Different factors can be responsible for stock-outs. For example, bad management at the central medical stores, or at the peripheral level, weakness in the logistics and delays in delivery, etc.
- *Basket of drugs:* Drugs selected from among the essential drugs which are most used in the country. They should also be selected on the basis of their general usefulness, affordability for the majority of the population and wide availability internationally.
- *Remote health facility:* A facility which is isolated from urban areas. For example a facility at a distance of more than 100 km from a city of 100,000 inhabitants would be regarded as being *remote*. (The remoteness of a facility does not, however, depend on distance alone but includes *accessibility* as well.)

III. Common data sources

Data for the numerator should be collected through a review of records in a sample of remote health facilities. Reference WHO/DAP/94.12 provides useful guidance on the sources of data for this indicator.

IV. Recommended Data collection methods

The numerator is obtained by adding the days of stock-out for each drug during the year and dividing the total by the number of drugs in the basket. The denominator is obtained from figures collected the previous three years. If the indicator is calculated for the first time, an estimated guess should be made for the past three years.

V. Use

The indicator measures the availability of the most needed essential drugs within health facilities. It can also be used to assess the performance of the distribution system and of the management of drugs at local level. If the logistics system is operational and if drugs are managed properly, they should be in stock most of the time. The indicator can help managers in the facilities and their supervisors at regional and national levels become aware of problems and take action. The indicator is further useful for monitoring the availability of drugs over time.

The two components of the indicator (numerator and denominator) provide useful information on the current drug situation.

Reference WHO/DAP/94.12 gives additional indicators to measure the availability and affordability of essential drugs in the private sector.

VI. Recommended format for presentation

The indicator should be presented by type of drug, type of health facility and disaggregated by geographical area.

VII. References

1. *Indicators for Monitoring National Drug Policies*. A practical manual. Geneva, World Health Organization, 1994 (Unpublished document WHO/DAP/94.12)
2. *How to Investigate Drug Use in Health Facilities*. Selected drug use indicators. Geneva, World Health Organization, 1993 (Unpublished document WHO/DAP/93.1).

C7.3 Rational Use of Drugs

GOAL- TO ENSURE UNIVERSAL ACCESS TO AN AGREED UPON SET OF ESSENTIAL HEALTH CARE AND SERVICES OF ACCEPTABLE QUALITY

I. Definition of indicator

Average number of drugs per prescription

Numerator Total number of different drugs prescribed

Denominator Number of prescriptions surveyed

II. Definition of important terms

- *Prescription*: A form filled up by a prescriber which lists the drugs the patient should take. When a prescription form is not provided, the indicator should review the number of drugs prescribed to the patient per encounter or consultation.
- *Prescriber*: every health worker who prescribes, e.g. doctor, nurse, midwife, etc.
- *Drugs*: combination drugs (i.e. a drug with more than one active ingredient) should be counted as one.

III. Common data sources

Survey of prescriptions in a sample of health facilities and drug outlets.

IV. Recommended data collection methods

Prescriptions or prescribing encounters can be sampled retrospectively, that is, by drawing random prescriptions or encounters from historical medical records, or they can be sampled prospectively by collecting data from current patients as they present for treatment on the day of the survey. The choice between retrospective and prospective data is linked to the existence of adequate sources of retrospective data.

The minimum recommended sample size of the health facilities where the prescriptions should be collected is 20. These should be selected randomly and at least 30 prescriptions per health facility should be collected, amounting to a total sample size of 600 prescriptions.

The drugs to be counted are the ones on the prescription, regardless of whether the patient actually received the drug.

Sometimes there are different types of patient encounters taking place within the same health facility. The indicator should be calculated from a sample of outpatient encounters representing a mix of health problems.

A model for sampling health facilities and data collection forms are provided in reference 1.

V. Use

The indicator is used to measure the degree of polypharmacy and therefore to monitor rational use of drugs. An average of more than two drugs per prescription is generally regarded as a reflection of a problem in prescribing practice. The indicator can also be used in the private sector.

VI. Recommended format of presentation

The indicator can be presented for a representative sample of health facilities; it can also be presented by type of health facility and disaggregated by geographical areas if there are wide variations in prescribing practices between health facilities and between regions.

VII. References

1. *Indicators for Monitoring National Drug Policies*. A practical manual. Geneva, World Health Organization, 1994 (Unpublished document WHO/DAP/94.12)
2. *How to Investigate Drug Use in Health Facilities*. Selected drug use indicators. Geneva, World Health Organization, 1993 (Unpublished document WHO/DAP/93.1).

Goal -

I. Definition of indicator

Proportion of health care personnel (by category) per 100 000 population

Numerator: Number of health care personnel (by category) x 100 000

Denominator: Total population

II. Definition of important terms

- *Health care personnel:* For the purposes of this indicator, health care personnel are people who have undergone formal instructions in health care delivery and certified to having attained a satisfactory proficiency for the training they underwent.

III. Common data sources

Information on health professionals is obtainable from certifying bodies and the population data from census reports.

IV. Recommended data collection methods

The information on the health professionals should be collected from the latest registers of the appropriate certifying body. Special effort should be taken to validate the information to ensure that it does not include people who are either dead or not working in the country (or that part of the country to which the indicator is supposed to relate). It may not be necessary to attempt to remove the people who are retired since this information is unlikely to be available with the certifying bodies.

The population information may be collected from census reports but may need to be up-dated.

V. Use

The indicator is useful in identifying inequities in the distribution of health care providers. Its use is, however, limited since it is not linked to *demand* for specific health services. Refinements may be made in the computation of, for example, the distribution of midwives by not basing the indicator on the total population but to women in childbearing age.

VI. Recommended format of presentation

The indicator should be presented by category of health care provider and geographic disaggregation (including urban and rural breakdown), as follows:

		Category per 100 000 population					
Area		Doctors	Nurses	Dentists	Midwives	Pharmacists	Others
I	Urban						
	Rural						
II	Urban						
	Rural						
III	Urban						
	Rural						
...							

VII. References

Issues in health services delivery. Human resources for health. Discussion paper 2. Geneva, World Health Organization, 2000 (Unpublished document WHO/EIP/OSD/00.2)

Goal -

I. Definition of indicator

International financial aid as a percentage of the total government health expenditure during a financial year

Numerator Total financial aid from bilateral and international agencies to the health sector in US\$ during a specified financial year x 100

Denominator Total financial expenditure to health in US\$ during the same financial year

II. Definition of important terms

None

III. Common data sources

The data on financial allocations and expenditure are obtainable from official government budget documents. Additional data on external financial sources may be obtainable from the reports of the various agencies.

IV. Recommended data collection methods

When collecting financial data care should be taken not to confuse *allocated* and *expended* finances.

V. Use

The indicator is useful for monitoring and assessment of the national capability for sustainable health care services. The indicator may be disaggregated between allocated and expended funds to monitor the absorption capacity of the health sector.

VI. Recommended format of presentation

The indicator should be presented in such a way that grants and loans are separated and wherever possible disaggregated according to the health sectors, and indicating capital and recurrent expenditures. The indicator should also be disaggregated between allocated and expended funds

VII. References

The Challenge of Implementation. District Health Systems for Primary Health Care. Geneva, World Health Organization, 1988 (Unpublished document WHO/SHS/DHS/88.1/Rev.1)

Goal -

I. Definition of indicator

Proportion of health care personnel (by category) per 1 000 people in need of the special services offered by the specific health care personnel category

Numerator Number of health care personnel of a specific category x 1 000

Denominator Total population in need of the special services offered by the specific health care personnel category

II. Definition of important terms

- *Health care personnel:* For the purposes of this indicator, health care personnel are people who have undergone formal instructions in health care delivery and certified to having attained a satisfactory proficiency for the training they underwent.

III. Common data sources

Information on health professionals is obtainable from certifying bodies and the population data from routine and special reports and special surveys.

IV. Recommended data collection methods

The data on the health professionals should be collected from the latest registers of the appropriate certifying body. Special effort should be taken to validate the information to ensure that it does not include people who are either dead or not working in the country (or that part of the country to which the indicator is supposed to relate). It may not be necessary to attempt to remove the people who are retired since this information is unlikely to be available with the certifying bodies.

The data on people in need of specific services are estimated from routine service reports or may be based on information in special reports depending on the health care service.

V. Use

The indicator is useful for assessing how demands for health care providers are met. Disaggregation of the indicator by geographic or administrative areas can provide information on inequities in meeting demands for health services.

VI. Recommended format of presentation

For each service, for which an indicator is needed, the results should be presented as follows:

		Health care personnel category per 1 000 population in need of the special service			
Area		Personnel category	...	Personnel category	
I	Urban				
	Rural				
II	Urban				
	Rural				
III	Urban				
	Rural				
...					

VII. References

Issues in health services delivery. Human resources for health. Discussion paper 2. Geneva, World Health Organization, 2000 (Unpublished document WHO/EIP/OSD/00.2)

C11.3 Knowledge of HIV-Related Preventive Practices

Goal - INCREASED ACQUISITION BY INDIVIDUALS AND FAMILIES OF THE KNOWLEDGE, SKILLS AND VALUES REQUIRED FOR BETTER LIVING MADE AVAILABLE THROUGH ALL EDUCATION CHANNELS INCLUDING THE MASS MEDIA, OTHER FORMS OF MODERN AND TRADITIONAL COMMUNICATION AND SOCIAL ACTION WITH EFFECTIVENESS MEASURED IN TERMS OF BEHAVIOURAL CHANGE. (Source: World Summit For Children)

I. Definition of indicator

Age group specific (15-19 and 15-49 years) proportion of people citing at least two acceptable ways of protection from HIV infection.

Numerator: age group specific (15-19 and 15-49 years) number of people citing at least two acceptable ways of protection from HIV infection.

Denominator: corresponding age group specific population (15-19 and 15-49 years) surveyed.

II. Definition of important terms

No special terms

III. Common data source

Data can be collected from periodic national (population) surveys or household surveys.

IV. Recommended Data collection methods

Knowledge of preventative practices in HIV/AIDS is a prerequisite for behavioural change. Knowledge is assessed by reading out to each respondent a list of three valid and five invalid methods of protection. Respondents who endorse two or more of the valid preventative methods will be classified as having effective knowledge of preventative methods.

The three "acceptable" ways of protection against HIV/AIDS are:

- Staying with one *faithful* partner
- Using condoms during sexual intercourse, and
- Making sure all injections are done with a clean needle.

The most appropriate way to obtain the above information is by including the question in a population survey. The target population should consist of males and females aged 15-49. The sample should consist of 800 men and 800 women randomly selected per geographical domain. Every adult in this age range should be interviewed in each household. Therefore, the sample size required will be around 700 households.

Individuals within households are to be selected on a de facto basis. In this definition, all persons of either sex aged 15-49 are included if they are either

actual residents of the household or if they spent the night before the interview in the household, whether members of the household or not.

V. use

To assess knowledge of HIV/AIDS preventive practices, among people who are aware of HIV/AIDS, as a guide for health education (IEC) programmes.

VI. Recommended format of presentation

The indicator should be disaggregated by age group, gender and location (urban/rural) and tabulated as follows:

	Not heard of AIDS	Heard of AIDS			Total
		“Not true” or “don’t know” to all items	All appropriate some inappropriate practices endorsed	Some inappropriate practices not endorsed	
Male					
Female					
Total					

VII. References

Evaluation of a National AIDS Programme: A Methods Package. 1. Prevention of HIV Infection. Geneva, World Health Organization, 1994 (Unpublished document WHO/GPA/TCO/SEF/94.1).

C13.1 Availability of Anti-Malaria Drugs in Health Facilities

Goal - TO CONTROL (I.E. PREVALENCE AND/OR MORTALITY RATES WILL BE SUBSTANTIALLY REDUCED) MALARIA

I. Definition of indicator:

Proportion of health facilities reporting that there was no rupture of stock of anti-malarial drugs in the health facility during the past three months and that there were enough drugs to treat all patients correctly during that time period out of reporting health facilities.

Numerator: Number of health facilities reporting that there was no rupture of stock of anti-malarial drugs in the health facility during the past three months and that there were enough drugs to treat all patients correctly during that time period.

Denominator: Number of reporting health facilities.

II. Definition of important terms

None

III. Common data sources

Records and reports collected as a routine part of service delivery, reports by supervisors, stock inventories.

IV. Recommended data collection methods

When such data do not exist or are not yet of adequate quality, special surveys or audits may be necessary. How often an indicator is measured depends on:

- when data will be needed;
- when meaningful changes in indicator levels can be expected;
- the resources needed to collect the data.

V. Uses

This is an indicator of the capability of the health facilities to meet the needs of the people for malaria treatment.

VI. Recommended format of presentation

None

VII. References

1. *Information systems for the evaluation of malaria control programmes, a practical guide*. Regional Office for Africa, Brazzaville, 1994 (Unpublished document AFRO/CTD/MAL/94.3).
2. *Report of the WHO Expert Committee on Malaria*. Technical Report Series Geneva. World Health Organization, 1998.

C13.2 Malaria Treatment Failure*

Goal - TO CONTROL MORTALITY DUE TO MALARIA (I.E. MORTALITY RATES WILL BE SUBSTANTIALLY REDUCED)

I. Definition of indicator

Proportion of malaria treatment failures among all patients treated for malaria during a year per thousand population.

Numerator: Number of malaria treatment failures among all patients treated for malaria during a year x 1,000

Denominator: Total patients treated for malaria during the same year

II. Definition of important terms

- *Case of confirmed uncomplicated malaria:* a person with symptoms and/or signs of malaria, confirmed by microscopy (or by immunodiagnostic test), who receives anti-malarial treatment.
- *Malaria treatment failure:* a patient with confirmed uncomplicated malaria who gives a history of having taken the correct dosage and regimen of the nationally recommended anti-malarial treatment, but presents within 14 days of the initiation of treatment with asexual parasitaemia on blood smear.

III. Common data sources

Most of the data needed for this indicator can be obtained from three general sources:

- a) Records and reports collected as a routine part of service delivery. (If standardized case definitions are used these data are of acceptable quality.)
- b) Reports by supervisors
- c) Household or community surveys

IV. Recommended data collection methods

When routine data do not exist or are not yet of adequate quality, special surveys may be necessary. Data from interviews or observations in health facilities can be easily collected during routine supervisory visits. How often an indicator is measured depends on:

- when information will be needed;
- when meaningful changes in indicator levels can be expected;
- the resources needed to collect the data.

V. Uses

This indicator can be used to evaluate the impact of control measures aiming at reducing severe malaria morbidity and mortality. The indicator is also used as a measure of the resistance to standard malaria treatment regimens. It could, therefore, be useful for decision on introduction of alternative treatments.

VI. Recommended format of presentation

The indicator should be disaggregated by age group, whenever possible at least into two groups: under 5 years and 5 years and older.

VII. References

1. *Information systems for the evaluation of malaria control programmes, a practical guide*. Regional Office for Africa, Brazzaville, 1994 (Unpublished document AFRO/CTD/MAL/94.3).
2. *Report of the WHO Expert Committee on Malaria*. Technical Report Series Geneva. World Health Organization, 1998.

C13.3 Malaria Mobility†*

Goal - TO CONTROL MORTALITY DUE TO MALARIA (I.E. MORTALITY RATES WILL BE SUBSTANTIALLY REDUCED)

I. Definition of indicator ²

- a) Proportion of cases of uncomplicated (clinical or confirmed) malaria seen in health care facilities during a year per thousand population.

Numerator: Number of cases of uncomplicated (clinical or confirmed) malaria seen in health care facilities during a year x 1,000

Denominator: Total population during the same year

- b) Proportion of cases of severe (probable or confirmed) malaria seen in health care facilities during a year per thousand population.

Numerator: Number of cases of severe (probable or confirmed) malaria seen in health care facilities during a year x 1,000

Denominator: Total population during the same year

II. Definition of important terms

- *Case of uncomplicated malaria:* a person with symptoms and/or signs of malaria who receives anti-malarial treatment.
- *Case of severe malaria:* a patient exposed to malaria that is hospitalized for a febrile disease and treated for severe malaria. The diagnosis should preferably be confirmed microscopically.

In areas without access to laboratory-based diagnosis, these cases should be indicated as *probable*. In areas with laboratory-based diagnosis they should be indicated as *confirmed*.

- *Asymptomatic malaria:* laboratory confirmation of parasitaemia in a person with no recent history of symptoms and/or signs of malaria.

III. Common data sources

Most of the data needed for these indicators can be obtained from three general sources:

- a) Records and reports collected as a routine part of service delivery. (If standardized case definitions are used these data are of acceptable quality.)
- b) Reports by supervisors
- c) Household or community surveys

² If the data for the denominator of these indicators are not easily available, proxy indicators may be computed by using the number of consultations in health facilities instead of the total population.

IV. Recommended data collection methods

When routine data do not exist or are not yet of adequate quality, special surveys may be necessary. Data from interviews or observations in health facilities can be easily collected during routine supervisory visits. How often an indicator is measured depends on:

- when information will be needed;
- when meaningful changes in indicator levels can be expected;
- the resources needed to collect the data.

V. Uses

These indicators can be used to evaluate the impact of control measures aiming at reducing severe malaria morbidity and mortality. The indicators are also used as a measure of the malaria workload to the health facilities. It could, therefore, be useful for allocation of resources for malaria treatment.

VI. Recommended format of presentation

The indicators should be disaggregated whenever possible into at least two age groups: under 5 years and 5 years and older.

VII. References

1. *Information systems for the evaluation of malaria control programmes, a practical guide*. Regional Office for Africa, Brazzaville, 1994 (Unpublished document AFRO/CTD/MAL/94.3).
2. *Report of the WHO Expert Committee on Malaria*. Technical Report Series Geneva. World Health Organization, 1998.

C13.4 Malaria Mortality†*

Goal - TO CONTROL MORTALITY DUE TO MALARIA (I.E. MORTALITY RATES WILL BE SUBSTANTIALLY REDUCED)

I. Definition of indicator

- a) Proportion of malaria deaths (probable or confirmed) during a year per thousand population.

Numerator: Number of malaria deaths (probable or confirmed) during a year x 1,000

Denominator: Total population during the same year

- b) Case fatality rate

Numerator: Number of probable and confirmed malaria deaths in health facilities during a year x 1,000

Denominator: Total number of patients with severe malaria admitted to health facilities during the same year

II. Definition of important terms

- *Case of severe malaria:* a patient exposed to malaria that is hospitalized for a febrile disease and treated for severe malaria. The diagnosis should preferably be confirmed microscopically.
- *Malaria death:* death of a patient who has been diagnosed with severe malaria.

In areas without access to laboratory-based diagnosis, these cases should be indicated as *probable*. In areas with laboratory-based diagnosis they should be indicated as *confirmed*.

- *Asymptomatic malaria:* laboratory confirmation of parasitaemia in a person with no recent history of symptoms and/or signs of malaria.

III. Common data sources

Most of the data needed for these indicators can be obtained from three general sources:

- a) Records and reports collected as a routine part of service delivery. (If standardized case definitions are used these data are of acceptable quality.)
- b) Reports by supervisors
- c) Household or community surveys

IV. Recommended data collection methods

When routine data do not exist or are not yet of adequate quality, special surveys may be necessary. Data from interviews or observations in health facilities can be easily collected during routine supervisory visits. How often an indicator is measured depends on:

- when information will be needed;
- when meaningful changes in indicator levels can be expected;
- the resources needed to collect the data.

V. Uses

These indicators can be used to evaluate the impact of control measures aiming at reducing severe malaria morbidity and mortality. The indicators are also used as a measure of the malaria workload to the health facilities. It could, therefore, be useful for allocation of resources for malaria treatment.

VI. Recommended format of presentation

The indicators should be disaggregated by whenever possible into at least two age groups: under 5 years and 5 years and older.

VII. References

1. *Information systems for the evaluation of malaria control programmes, a practical guide*. Regional Office for Africa, Brazzaville, 1994 (Unpublished document AFRO/CTD/MAL/94.3).
2. *Report of the WHO Expert Committee on Malaria*. Technical Report Series Geneva. World Health Organization, 1998.

C18.1 TB Treatment Outcome Indicators

Goal - TO CONTROL TUBERCULOSIS, I.E. PREVALENCE AND /OR MORTALITY RATES WILL BE SUBSTANTIALLY REDUCED

I. Definition of indicators

Outcome	Indicator	Numerator	Denominator
(a) Cured	Proportion of new sputum smear positive cases, in a given period of time, who completed treatment and had at least two negative sputum smear results, one of which at the completion of treatment out of the total number of new smear positive cases registered for treatment during the same period.	Number of new sputum smear positive cases, in a given period of time, who completed treatment and had at least two negative sputum smear results, one of which at the completion of treatment	Total number of new smear positive cases registered for treatment during the same period.
(b) Completed treatment	Proportion of new sputum smear positive, in a given period of time, who completed treatment but with no or only one negative sputum examination in the continuation phase and none at the end of treatment out of the total number of new smear positive cases registered for treatment during the same period	Number of new sputum smear positive, in a given period of time, who completed treatment but with no or only one negative sputum examination in the continuation phase and none at the end of treatment.	Total number of new smear positive cases registered for treatment during the same period.

Outcome	Indicator	Numerator	Denominator
(c) Died	Proportion of new sputum smear positive cases, in a given period of time, who died for any reason during treatment out of the total number of new smear positive cases registered for treatment during the same period	Number of new sputum smear positive cases, in a given period of time, who died for any reason during treatment.	Total number of new smear positive cases registered for treatment during the same period.
(d) Treatment failure	Proportion of new sputum smear positive cases who remained or became again smear-positive at 5 months or later during treatment out of the total number of new smear positive cases registered for treatment during the same period	Number of new sputum smear positive cases who remained or became again smear-positive at 5 months or later during treatment.	Total number of new smear positive cases registered for treatment during the same period.
(e) Treatment interrupted	Proportion of new sputum smear positive cases whose treatment was interrupted for 2 months or more out of the total number of new smear positive cases registered for treatment during the same period	Number of new sputum smear positive cases whose treatment was interrupted for 2 months or more.	Total number of new smear positive cases registered for treatment during the same period.

Outcome	Indicator	Numerator	Denominator
(f) Transfer out	Proportion of new sputum smear positive cases who had been transferred to another reporting unit and for whom the treatment outcome is unknown out of the total number of new smear positive cases registered for treatment during the same period	Number of new sputum smear positive cases who had been transferred to another reporting unit and for whom the treatment outcome is unknown.	Total number of new smear positive cases registered for treatment during the same period.

II. Definition of important terms

- *New case* : A patient who has never had treatment for tuberculosis or has taken anti-tuberculosis drugs for less than four weeks.
- *Relapse*: a patient who becomes smear positive again after having been treated for TB and declared “cured” after completion of treatment.
- *Retreatment cases*: previously treated patients (for at least 4 weeks) including failures, relapses, and interrupted treatment.
- *Pulmonary TB, smear positive case*: a patient who fulfils the following criteria:
 - at least two sputum specimens positive for acid-fast bacilli (AFB) by microscopy; or
 - at least one sputum specimen positive for acid-fast bacilli by microscopy and radiographic abnormalities consistent with pulmonary TB; and a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
 - at least one sputum specimen positive for AFB by microscopy, which is culture positive for *M. tuberculosis*.
- *Pulmonary TB, smear negative case*: a patient who fulfils the following criteria:
 - two sets (taken at least 2 weeks apart) of at least 2 sputum specimens negative for AFB on microscopy; radiographic abnormalities consistent with pulmonary TB and a lack of clinical response despite being on one week of a broad-spectrum antibiotic; a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
 - a severely ill patient; at least two sputum specimens negative for AFB by microscopy; radiographic abnormalities consistent with extensive pulmonary TB (interstitial or miliary), a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
 - a patient whose initial sputum smears were negative, who had sputum sent for culture initially, and whose subsequent sputum culture result is positive.
- *Extra-pulmonary TB*: Tuberculosis of organs other than the lungs: TB of the pleura (TB pleurisy), of peripheral lymph nodes, abdomen, genito-urinary tract, skin, joints and bones, tubercular meningitis. Diagnosis should be based on one culture positive specimen from an extra-pulmonary site, or histological or strong clinical evidence consistent with active extra-pulmonary TB followed by a

decision by a medical officer to treat with a full course of anti-tuberculosis therapy. Pleurisy is classified as extra-pulmonary tuberculosis. Any patient diagnosed with both pulmonary and extra-pulmonary TB should be classified as a case of pulmonary tuberculosis.

III. Common data sources

- *Special treatment follow-up and treatment monitoring system,*
- *Health facility patient records,*
- *Health facility reports.*

IV. Recommended data collection methods

A recording and reporting system using standardized material which provides, through sputum smear examination, clear information on type of diseases and case category, and, through cohort analysis, information on treatment results. This system is a tool to evaluate the essential aspects of the control programme and should be used in preparing annual evaluation report on the programme.

V. Use

All these indicators, **except (c)** are measures of the effectiveness of tuberculosis case management and of the performance of the tuberculosis control programme.

Indicator (c) is a **proxy** of tuberculosis fatality rate since the numerator includes deaths due to **any** cause. It is, however, a useful indicator of the effectiveness of performance of a programme when the large majority of deaths of TB patients are actually due to TB.

VI. Recommended format of presentation

Registered cases	Evaluated cases	Negative smear at the end of treatment (cured)	Completed treatment but smear not done at the end	Died	Failure	Interrupted treatment	Transferred out

VII. References

Framework for effective tuberculosis control. Geneva, World Health Organization, 1994 (Unpublished document WHO/TB/94.17)

C18.2 Annual Tuberculosis Case Notification

Goal -TO CONTROL TUBERCULOSIS, I.E. PREVALENCE AND /OR MORTALITY RATES WILL BE SUBSTANTIALLY REDUCED.

I. Definition of indicator

Annual tuberculosis notification rate per 100,000 population

Numerator: Number of tuberculosis cases notified during a given year x 100,000

Denominator: Mid-year population

II. Definition of important terms

- *New case:* A patient who has never had treatment for tuberculosis or has taken anti-tuberculosis drugs for less than four weeks.
- Relapse:* a patient who becomes smear positive again after having been treated for TB and declared “cured” after completion of treatment.
- Pulmonary TB, smear positive case:* a patient who fulfils the following criteria:
 - at least two sputum specimens positive for acid-fast bacilli (AFB) by microscopy; or
 - at least one sputum specimen positive for acid-fast bacilli by microscopy and radiographic abnormalities consistent with pulmonary TB; and a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
 - at least one sputum specimen positive for AFB by microscopy, which is culture positive for *M. tuberculosis*.
- Pulmonary TB, smear negative case:* a patient who fulfils the following criteria:
 - two sets (taken at least 2 weeks apart) of at least 2 sputum specimens negative for AFB on microscopy; radiographic abnormalities consistent with pulmonary TB and a lack of clinical response despite being on one week of a broad-spectrum antibiotic; a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
 - a severely ill patient; at least two sputum specimens negative for AFB by microscopy; radiographic abnormalities consistent with extensive pulmonary TB (interstitial or miliary), a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
 - a patient whose initial sputum smears were negative, who had sputum sent for culture initially, and whose subsequent sputum culture result is positive.
- Extra-pulmonary TB:* Tuberculosis of organs other than the lungs: TB of the pleura (TB pleurisy), of peripheral lymph nodes, abdomen, genito-urinary tract, skin, joints and bones, tubercular meningitis. Diagnosis should be

based on one culture positive specimen from an extra-pulmonary site, or histological or strong clinical evidence consistent with active extra-pulmonary TB followed by a decision by a medical officer to treat with a full course of anti-tuberculosis therapy. Any patient diagnosed with both pulmonary and extra-pulmonary TB should be classified as a case of pulmonary tuberculosis.

III. Common data sources

- Health facility patient records,
- Health facility reports.

IV. Recommended data collection methods

A recording and reporting system using standardized material which provides, through sputum smear examination, clear information on type of diseases and case category, and, through cohort analysis, information on treatment results. This system is a tool to evaluate the essential aspects of the control programme and should be used in preparing annual evaluation report on the programme.

V. Use

This is a measure of the effectiveness of tuberculosis control measures.

VI. Recommended format of presentation

Absolute numbers of all newly notified cases by disease classification:

Pulmonary					
Smear					
Positive		Negative	Not done	Extra-pulmonary	Total
New cases	Relapses				

Absolute numbers age and sex breakdown of notified new smear positive cases:

	0-14	15-24	25-34	35-44	45-54	55-64	65+	Total
Male								
Female								

VII. References

Framework for effective tuberculosis control. Geneva, World Health Organization, 1994 (Unpublished document WHO/TB/94.17)