INDICATOR FOR LOCAL LEVEL HEALTH PLANNING

This chapter provides discussion on various health and family planning indicators enable readers and district level health programme managers to understand the concept that are used to monitor and evaluate health programmes and translate. These concepts into local level health planning, requirement at Sub-Centre or PHC or district level may be worked out using following concept:

To estimate the probable number of pregnancies that may occur in any area, the following formula could be used:

\[
\text{Probable number of Pregnancies} = \text{Population of the area} \times \text{Birth rate of the area (district/state)}
\]

Once the probable number of pregnancies is estimated this also will be the probable number of deliveries that an ANM can except in her area.

The number of antenatal registrations to be expected would be the probable number of pregnancies with an additional 10% of that number to account for abortions.

According the number of antenatal registration the MCH services e.g. ANC visits, TT doses, IFA administration can be estimated.

It has been observed that 15% of the antenatal women registered in a population are usually high risk. Thus to estimate the number of high risk women that an ANM can expect she should compare her figures with a number which is 15% of the expected antenatal registration.

It has also been observed that 50% of the antenatal cases registered are anaemic. Thus the ANM should compare her figures which is 50% of the expected antenatal registration.

The number of live births to be expected or deliveries to be expected are estimated by the following formula:

\[
\text{Number of live births} = \text{Population of the area} \times \text{Birth rate of the area}
\]

It is noted that out of the total number of live births there are usually 10% of these which are sick or high risk and need referral. The ANM should compare her figures of high risk newborns with a number which is 10% of the number of live births.

No. of live births: Information on live births is very important and will help the state officer to calculate many RCH Indicators.

Total number of live births serves as a denominator for the following indicators

- Antenatal Care Coverage.
- Percentage of pregnant women who have received 100 IFA tables.
- Percentage of pregnant women who have received TT2 or booster.
- Proportion of Births attended by skilled health personnel.
- Proportion of Institutional deliveries.
- Still birth rate.
To estimate the number of infants to be immunized in the coming year, it is necessary to estimate the number of infants alive at one year.

No. of infants who have died during the year (No of infants who have died during the year can be calculated by using the Infant Mortality Rate of the area).

**Children below 3 year of age:** can be estimated from the fact that the average population of children below 3 year is approximately 8% of total population in most of the Indian States. This figure will assist the ANM in estimating no. of Vitamin A doses necessary.

**Children below 5 years of age:** This age group constitutes approximately 13% of total population. The estimation of this number would assist the ANM in estimating the number of D.T. doses to be used.

**Illustration:**

If population of a district is 1 lakh and birth rate (CBR) as provided by DLHS is 25 live births per 1000 population and Infant Mortality Rate as provided by the survey is 50 per 1000 live births.

The probable number of pregnancies that may occur in selected district/area can be estimated by the following formula:

\[
\text{Probable number of pregnancies} = \text{Population of the area} \times \text{Birth rate of the area (district/state)}
\]

\[
\text{Probable number of pregnancies} = 1,00,000 \times \frac{25}{1000}
\]

\[
\text{Probable number of pregnancies} = 25,000
\]

This also will be the probable number of deliveries/live births in the selected district/area.

The number of antenatal registrations to be expected would be the probable number of pregnancies with an additional 10% of that number to account for abortions.

\[
\text{Number of antenatal registration} = 2500 + \left(\frac{2500 \times 10}{100}\right) = 2750
\]

According the number of antenatal registration the MCH services e.g. ANC visits, TT doses, IFA administration can be estimated.

15% of the antenatal women registered in a population are usually high risk. Thus to estimate the number of high risk women = 2750 + \left(\frac{(2750 \times 15)}{100}\right) = 3162.5.

**Expected number of anemic women** in population will be approximately 2750 \times 50/100 = 1375.

To estimate the number of infants to be immunized in the coming year, it is necessary to estimate the number of infants alive at one year.
No. of infants who have died during the year (No of infants who have died during the year can be calculated by using the Infant Mortality Rate of the area).

Total Number of Infants alive at 1 yrs of age = [Live Births-(live birth*IMR/1000)]
= 2500-(2500*50/1000)
= 2375

Children below 3 years of age: average population of children below 3 years is approximately 8% of total population in most of the Indian States. This figure will assist the ANM in estimating no. of Vitamin A doses necessary.
= 1,00,000 x 8/1000 = 8,000

Children below 5 years of age: This age group constitutes approximately 13% of total population. The estimation of this number would assist the ANM in estimating the number of D.T. doses to be used.
= 1,00,000 x 13/1000 = 13,000
An attempt has been made to provide for selected indicators simple definitions, data requirement, data sources, and usefulness and limitations.

A conceptual framework for reproductive and child health helps those involved in programme design, management and implementation to select the appropriate input, process, output and impact indicators to monitor and evaluate whether and how these interventions have helped to achieve RCH/NRHM objective.
5A. **Process Indicators:** Implementation of RCH/NRHM activities is the process through which the desired interventions are carried out to achieve programme outputs. The process indicators of reproductive and child health address operational issues and questions that can be answered with programme level data and measures. The indicators may enable policy makers and programme managers to assess and improve RCH services so that clients can achieve their reproductive health intentions.

IND.1. Birth attended by Skilled Birth Attendants.

IND.2. Use of Antenatal Care (ANC) services.

IND.3. Number of Pregnant Women Identified with Obstetric Complication and Attended at Public/Private Health Facilities.

IND.4. Proportion of C-Section Deliveries to total Deliveries.

IND.5. Post Partum Care.

5B. **Output indicators:** If the activities of a RCH programme are implemented as desired, then the resulting outputs should contribute to achieving expected impacts. The output indicators of a RCH programme are knowledge of RCH, utilization of RCH service and prevalence of contraception, etc.

These indicators track people-level impact in terms of use of services or other behavior and are best monitored through population based surveys. These indicators can be the most effective measures of programme impact because the time period required to show significant change is typically shorter than that required for changes in health status or fertility. These indicators are normally available for nation, state, district or even sometimes at block level.

IND.6. Contraceptive prevalence rate (CPR).

IND.7. Couple years of protection (CYP)

IND.8. Immunization coverage.

IND.9. Birth Weight

IND.10. Infant feeding practices.

IND.11. Exclusive breastfeeding.


IND.13. Nutritional Status among Children

IND.14. Vitamin A supplementation.

IND.15. Oral rehydration therapy (ORT) use rate

IND.16. Treatment of acute respiratory infection (ARI).

IND.17. Treatment of fever (presumptive malaria)

IND.18. Reported condom use with non-regular partner

IND.19. Reported condom use with regular partner

IND.20. Reported non-regular sexual partners

IND.21. Treatment of STIs
5.C. Impact Indicators: The effect of RCH intervention introduced through programme activities and the resulting outputs must have an impact on the population. Therefore, the outcomes of a programme must be eventually measured at the population level. The impact indicators that measure changes at the population level are fertility, mortality and morbidity rates.

These indicators require a longer periods as short as five years, to effect and measure substantial change in its value and normally available for a larger geographical area viz.

IND.22. Crude Birth Rate.
IND.23. Total Fertility Rate (TFR)
IND.24. Infant Mortality Rate (IMR)
IND.25. Under-Five Mortality Rate (U5MR)
IND.26. Maternal Mortality Ratio (MMR)
IND.27. RTI/STI
IND.28. HIV/STI prevalence or incidence
IND.29. Prevalence of Vitamin A deficiency
IND.30. Nutritional Status.
### IND.1. PERCENTAGE OF BIRTHS ATTENDED BY TRAINED BIRTH ATTENDANTS (TBA)

<table>
<thead>
<tr>
<th>Rational for use</th>
<th>The indicator is useful in assessing maternal and child health programme.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>Percentage of births attended by trained health personnel, excluding traditional birth attendants in a given period. The indicator is calculated as:</td>
</tr>
</tbody>
</table>

\[
\text{Number of births attended by trained birth attendants (TBA) in a year} \times 100 \\
\text{Total number of live birth occurred during the same year}
\]

**Date requirements:**
Number of births attended by trained personnel during a specific year; and the total number of five births occurred during the same year.

<table>
<thead>
<tr>
<th>Programmatic Goals</th>
<th>MDG/ICPD/NRHM Mandate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RCH-2 Goal:</strong></td>
<td>Improve coverage of institutional deliveries/safe deliveries from 39.8%/54.07% (RHS 2002-03) to 80% in 2010.</td>
</tr>
</tbody>
</table>

| Data Sources | Health service statistics; Birth registration data. DHS, other population - based surveys. |

This indicator is best calculated from a survey, since vital registration systems are lacking in most developing nations. Where health information systems are comprehensive administrative estimates are also possible based on reported deliveries divided by estimated births.

| Desegregation | Nation, State, District. |

### IND.1a. PROPORTION OF BIRTHS ATTENDED BY SKILLED HEALTH PERSONNEL

<table>
<thead>
<tr>
<th>Type:</th>
<th>Coverage/Quality.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>Percentage of deliveries at home, which are attended to by a skilled birth attended.</td>
</tr>
</tbody>
</table>

**Calculation:**

\[
\frac{\text{Number of deliveries attended by skilled birth attendants during a specific period}}{\text{Total number of live birth during the specific period}} \times 100
\]
IND 1b. PROPORTION OF INSTITUTIONAL DELIVERIES

**Type:** Coverage/Quality

**Definition:** It is defined as the proportion of deliveries, which are conducted health institutions, which includes the public as well as private health facilities.

**Calculation:**

\[
\text{Number of deliveries occurring at public plus private health facilities during specific period} \times 100 \\
\text{Total number of live birth during the specific period}
\]

### IND.2. ANTENATAL CARE COVERAGE

**Rationale for use**

Proxy measure to assess progress towards reducing maternal mortality.
- This refers to number of women of attended, at least once during their pregnancy, by skilled health personnel for reasons relating to pregnancy.
- Provides information on proportion of women who use antenatal care services.
- Proxy measure to assess progress towards reducing maternal mortality.
- A pregnant woman can have an antenatal check up by visiting a doctor or another health professional in a medical facility, receiving a home visit from a health worker or both.
- Antenatal checkup includes history, abdominal palpation, blood pressure check up, looking for edema/ urine examination, blood grouping and hemoglobin test; and management and referral of pregnancy complications.
- It is recommended that a pregnant woman should have at least 3 antenatal check ups. This indicator is important because a woman registering for ANC may never return for follow visits and hence has to be paid a home visit by health worker.
- Apart from 3 ANC check ups. RCH programme recommends women should receive two doses of tetanus toxoid vaccine (TT); 100 iron and folic acid (IFA) tablets to prevent tetanus and treat anemia.

**Definition:**

This refers to number of women attended, at least once during their pregnancy, by skilled health personnel for reasons relating to pregnancy. Provides information on proportion of women who use antenatal care services.

This indicator is calculated as:

\[
\frac{\text{Total number of pregnant women registered for ANC during a fixed period}}{\text{Total number of live birth during the same period}} \times 100
\]

**Data requirement:** Number of births attended by trained personnel during a specific year; and the total number of live births occurred during the same year.

**Programmatic Goals**

**RCH -2 Goal:** Improve coverage of full Ante Natal Care (ANC) from 44.5% (RHS 2002-03) to 89% in 2010.

**Data Sources**

Health service statistics; Birth registration data. DHS, other population based surveys. The indicator is best calculated form a survey, since vital registration systems are lacking in most developing nations. Where health information systems are comprehensive, administrative estimates are also possible based on reported deliveries divided by estimated births.

**Desegregation**

Nation, State, District.
IND 2.a. PROPORTION OF PREGNANT WOMEN REGISTERED IN THE FIRST TRIMESTER.

First trimester registration always encourages as it helps in the identification of risk cases and prevention of adverse pregnancy outcome. Early registration of pregnancy and services are beneficial for the growth of the foetus and the health of the mother.

Type: Quality

Calculation:

\[
\frac{\text{Number of pregnant women registered in the first trimester}}{\text{Total number of pregnant women registered for ANC during a fixed period}} \times 100
\]

IND 2.b. PROPORTION OF PREGNANT WOMEN LESS THAN 19 YEARS OF AGE REGISTERED FOR ANC.

This information is collected to see the proportion of teenage pregnancies and the extent to which services are being availed.

Type: Coverage

Calculation:

\[
\frac{\text{Number of pregnant women less than 19 yrs registered for ANCx100}}{\text{Estimated number of pregnancies in women less than 19 years of age}} \times 100
\]

IND 2.c. PROPORTION OF PREGNANT WOMEN LESS < 19 YEARS REGISTERED IN THE FIRST TRIMESTER.

Calculation:

\[
\frac{\text{Number of women less than 19 years registered in the first trimester}}{\text{Total number of pregnant women pregnant women less < 19 years registered for ANC during a fixed period}} \times 100
\]

IND 2.d. PERCENTAGE OF PREGNANT WOMEN WHO HAVE RECEIVED 3 ANTENATAL CHECK UPS.

A pregnant woman can have an antenatal check up by visiting a doctor or another health professional in a medical facility, receiving a home visit from a health worker or both. Antenatal checkup includes history, abdominal palpation, blood pressure check-up, looking for edema, urine examination, blood grouping and haemoglobin test and management and referral of pregnancy complication. It is recommended that a pregnant woman should have at least 3 antenatal checkups. This indicator is important because of a woman registering for ANC may never return for follow visits and hence has to be paid a home visit by a health worker.

Type: Coverage/Quality
**Definition:** This refers to the percentage of women who have received at least 3 antenatal check ups by visiting a doctor or another health professional in a medical facility receiving a home visit form a health worker or both.

**Calculation:**

\[
\text{Number of pregnant women receiving 3 antenatal check ups} \times 100
\]
\[
\text{Total number of registered pregnant women.}
\]

**IND 2.e.** PROPORTION OF PREGNANT WOMEN LESS THAN 19 YEARS WHO HAVE RECEIVED 3 ANTEANATL CHECK UPS:

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Number of pregnant women less than 19 years receiving 3 ANC check ups</td>
<td>( \times 100 )</td>
</tr>
<tr>
<td>Total number of pregnant women &lt;19 yrs registered for ANC during a fixed period.</td>
<td></td>
</tr>
</tbody>
</table>

Apart from 3 ANC check ups, RCH programme recommends women should receive two doses of tetanus toxoid vaccine (TT); 100 iron and folic acid (IFA) tablets to prevent tetanus and treat anemia.

**IND 2.F.** PERCENTAGE OF PREGNANT WOMEN WHO HAVE RECEIVED 100 IFA TABLETS.

**Type:** Coverage

**Definition:** This refers to the percentage of women who have received 100 tablets of iron and folic acid.

**Calculation:**

\[
\text{Number of pregnant women who have received 100 IFA tablets} \times 100
\]
\[
\text{Total number of live births during the year } \times 1.10
\]

<table>
<thead>
<tr>
<th><strong>IND.2.g IMMUNIZATION COVERAGE AMONG WOMEN OF REPRODUCTIVE AGE</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Rationale for use</strong></td>
</tr>
<tr>
<td>TT1: At first contact or as early as possible during pregnancy.</td>
</tr>
<tr>
<td>TT2: Four weeks after TT1, no later than 2 weeks before delivery.</td>
</tr>
<tr>
<td>TT3: Six months after TT2, or during next pregnancy.</td>
</tr>
<tr>
<td>TT4: One year after TT3, or during next pregnancy.</td>
</tr>
<tr>
<td>TT5: One year after TT4, or during next pregnancy.</td>
</tr>
<tr>
<td>(WHO/EPI)</td>
</tr>
</tbody>
</table>
**Definition:** Percentage of women age 15-49 receiving two or more tetanus toxoid (TT) doses during or before their pregnancies.

This refers to the percentage of women who have received second dose of Tetanus Toxoid or booster.

**Type:** coverage/Quality

**Calculation:**

\[
\text{Number of women who have received TT2 or booster} \times 100
\]

\[
\text{Total number of live births during the year} \times 1.10
\]

**Unit:** Percent.

**Data Sources**

NFHS, DLHS, standard SHO cluster surveys, administrative estimate.

Past reporting on this indicator has been restricted to women receiving two doses their pregnancies (TT2). The revised indicator (TT2+) also includes women who have received the appropriate number of property spaced boosters in the years proceeding the pregnancy in question. TT2+ is far more difficult to accurately measure and cannot be calculated through administrative methods.

DHS surveys typically underestimate coverage by focusing only on doses given during the last 1 or 2 pregnancies.
### Rationale for use
- This include the number of women who developed obstetric complications and were taken/referred to a health facility within 2 hours.
- According to the guidelines the five major direct obstetric complications that are responsible for maternal mortality are:
  - Obstructed Labour
  - Post Partum Haemorrhage
  - Ante Partum Haemorrhage
  - Eclampsia
  - Puerperal Sepsis
- It gives an idea of coverage of obstetric complications.
- It reflects upon performance of the referral system.
- Number of cases attended at public health facilities in comparison to private health facilities reflects upon the utilization of public health services.

National Standard definitions on complications should be used by providers for consistency and comparability.

### Definition
- **Proportion of women with obstetric complications**
- **Met Need for obstetric complication.**

The two indicators can be calculated periodically and annually. Periodic will provide an idea of movement and ideally it is good to calculate annually.

Type: Coverage

These are important process indicators or Obstetric Services. It is expected that 15% of pregnancies have one or the other direct obstetric complication. To what extent the institutional services have been availed for obstetric complication can be obtained and to what extent the institutions have addressed the met need.

**(a) Definition: Proportion of women with obstetric complication attended at institutions**

**Calculation:**

\[
\text{Proportion} = \frac{\text{Number of women with obstetric complication during the reference period}}{\text{Number of births during the reference period}} \times 100
\]

**(b) Definition: Met Need for EmOC services**

**Calculation:**

\[
\text{Met Need} = \frac{\text{Number of women with obstetric complication treated}}{\text{Expected Number of complication in the area}} \times 100
\]
### IND.4. PROPORTION OF C-SECTION DELIVERIES TO TOTAL DELIVERIES.

| Rationale for use | The reflects upon the management of high risk cases.  
|                  | It also gives an idea about the utilization of public health facilities and  
|                  | Trends in C-Section births remained constant, increased or decreased. |
| Definition       | Type: Coverage  
|                  | The UN Process indicators have assumed the minima and maxima range of C-section to be between 5% and 15% respectively. So it is important to find out the extent of.  
|                  | Type: Coverage  
|                  | **Definition:** Number of C-Section deliveries  
|                  | Number of births during the same period. |

### IND.5. POST PARTUM CARE

| Rationale for use | This includes the number of clients who had non-institutional deliveries who received a post natal check up. Component of post partum check up include abdominal examination, family planning advice, breast feeding advice and baby care advice. |
| Definition        | **Coverage of Post Partum Care**  
|                  | Type: Coverage  
|                  | (a) Definition: Percentage of home deliveries with post partum check up within 2 days and between 2 to 14 of birth.  
|                  | (b) Calculation: Separate calculation need to be done for post partum check up within 2 days and 2 to 14 days of birth:  
|                  | \[
|                  | \text{No. of mothers receiving one post partum check up within 2 days or 2 to 14 days of birth}  
|                  | \times 100  
|                  | \text{Total number of live births}  
|
Methodology for Monthly Performance Report on FW Statistics

I Sterilization:

a) Total No. of eligible couples @ in the beginning of year:
   \( EC = \text{Projected population during the year} \times \text{Rate}^* \)
   \(^\star \text{Rate} = \text{estimated eligible couple per 1000 population on the basis of 2001 census} \)
   @ = Eligible couples are those couples whose wife is in the age group 15-45 years. Females are not eligible for sterilization after 45 years of age.

b) Unsterilized couples are calculated:
   \( \text{Total no. of estimated eligible couples minus Estimated Sterilized Couples }$ as per NFHS II \)
   $ $ Estimated Sterilized Couples are Calculated:
   \( \text{Estimated eligible couples multiplied by } \% \text{age current user of Ster.} \)

c) Current Year Performance: As per the monthly report received from States/UTs about the total number of operations done.

d) Last year performance of corresponding month for which report is prepared.

e) % change in current month performance over corresponding month.

f) Estimated Unsterilized Couples exposed to higher order births 3 & 3+:
   \( \text{Estimated No. of EC Unsterilized multiply by } \% \text{age no. of couples who have 3 or more children source NFHS II/II} \)

g) Sterilization per 10,000 unsterilized couples exposed to higher order of birth 3 & 3+:
   \( \text{Current Sterilization devided by Est. unsterilized couples exposed to higher order of births multiplied by 10,000} \)

II IUD Insertions:

a) Total No. of eligible couples unsterilized in the beginning of year as taken in Sterilization statement.

b) Performance of particular month during current year.

c) Performance of particular corresponding month during last year

d) % Change

e) Current IUDs divided by Est. unsterilized couples exposed to higher order of births multiplied by 10,000)
III Eq. Condom Users:

a) Total No. of eligible couples unsterilized in the beginning of year as taken in sterilization statement.

b) Performance of particular month during current year, condom users are calculate: (No. of condom pieces (Net)/72)X12/1..2..3 for April, May, June).

c) Performance of particular corresponding month during last year .......... same methodology as above.

d) % Change.

e) Current Condom users divided by Est. unsterilized couples exposed to higher order of birth multiplied by 10,000)

f) Note: Eq. Condom users are cumulative users as one beneficiary who uses 72 condoms pieces in a year is counted one user.

IV. Eq. Oral Pill Users:

a) Total No. of eligible couples unsterilized in the beginning of year as taken in Sterilization statement.

b) Performance of particular month during current year. Oral Pill users are calculated: (No. of OP Cycle/13) X(12/1..2..3 for April, May, June)

c) Performance of particular corresponding month during last year..... same methodology as above

d) % Change

e) Oral Pill Users per 10,000 unsterilized couples during current year.

f) Note: Eq.Olral Pill users are cumulative users as one beneficiary who uses 13 cycles in a year is counted one user.
### Rationale for use

The vaccination of children against six serious but preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, and measles) has been a cornerstone of the child health care system in India. As part of the national policy, the national immunization program is being implemented on a priority basis. The expanded Program on Immunization (EPI) was initiated by GOI in 1978 with the objective of reducing morbidity, mortality, and disabilities from six diseases by making free vaccination services easily available to all eligible children. Immunization coverage estimates are used to monitor immunization services, to guide disease eradication and elimination efforts, and are a good indicator of health system performance.

### Definition:

Percentage of children under one year of age who have received each vaccination at the recommended age and interval, as stated in the national immunization policy, Coverage rates can be tracked for each specific recommended vaccine – BCG, DPT, Measles, Polio, or for complete coverage with all the recommended vaccines.

Coverage for each of the individual antigens requires that the proper number of doses have been administered: three doses in the case of polio (not including dose at birth), DPT; and one dose for BCG, and Measles.

DPT3 immunization coverage is the percentage of one year olds who have received three doses of the combined diphtheria and tetanus and pertussis vaccine in a given year.

Complete vaccination coverage refers to the proportion of children who have received all of the nationally-recommended childhood vaccinations. (BCG+3DPT+OPV+Measles) before their first birthday.

### Programmatic Goals

Achieving universal immunization of children against all vaccine preventable diseases by 2010 is one of the major goal of NPP. The policy also sets the strategy of strengthening community level health care delivery system, ensuring 100 percent immunization with a specific emphasis on tetanus and measles and rigorous pursue of pulse polio campaign to achieve the said goal.

**RCH-2 goal:** Improve coverage of fully immunized children from 48.2% (RHS 2002-03) to 100% hr 2010

### Data Sources

**Official Statistics:** The data for childhood immunization indicators are recorded by MOHFW

<table>
<thead>
<tr>
<th>Primary source of data</th>
<th>Sub Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow of Data</td>
<td>Sub Centre ------ PHC ------ District ------State-----Nation</td>
</tr>
<tr>
<td>Periodicity</td>
<td>Annually</td>
</tr>
</tbody>
</table>

Administrative estimates of vaccination coverage can be made by dividing the number of doses of each antigen administered to children under one year of age during a given time period (typically one year) by an estimate of the pool of children eligible for vaccination (the number of newborns for calculating BCG coverage and number of newborns surviving their first year for all other antigens). The administrative method is commonly used to obtain national level data, but resulting estimates may be skewed by various shortcomings, including inaccurate estimates of the target population, unreliable grouping of children by age categories in routine vaccination reports, and incomplete or otherwise inaccurate aggregations of tallies of children vaccinated at each level of reporting.
Survey Statistics: NFHS, RCH-DLHS, MICS, standard WHO or UNICEF cluster coverage surveys; Indicators of child immunization are estimated at state level in NFHS and MICS, while in RCH-DLHS survey it is estimated at district level.

Survey estimates give immunization coverage among the age cohort surveyed; the recommended cohort is children 12-23 months of age because they are the ones expected to have used immunization services during the preceding year. Survey estimates should calculate children vaccinated before their first birthday as a proportion of all children 12-23 months of age. It is necessary to define in advance what documentation of vaccination is acceptable – card alone or card plus caretaker’s recall – and what constitutes correct vaccination. Administrative estimates from routine data may differ greatly from survey-based estimates.

Desegregation
By Sex, location (urban/rural, district and state) and socio-economic characteristics

References
MOHFW

<table>
<thead>
<tr>
<th>IND. 8a</th>
<th>PROPORTION OF CHILDREN AGED 9-12 MONTHS WHO ARE FULLY IMMUNIZED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale for use</strong></td>
<td>The indicator shows the effectiveness of the immunization programme. The “fully immunized” status generally includes immunization with BCG + three doses of DPT &amp; OPV + measles.</td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Number of children aged 9-12 months who are fully immunized as a percentage of all children aged 9-12 years in a calendar year.</td>
</tr>
<tr>
<td><strong>Data requirements:</strong></td>
<td>Number of children aged 9-12 months who are fully immunized in a given period and the given population; and all children aged 9-12 months during the same period and the same population.</td>
</tr>
<tr>
<td><strong>Data Sources</strong></td>
<td>Services statistics; Population census.</td>
</tr>
</tbody>
</table>

Fully immunized: Immunization with BCG + three doses of DPT & OPV + measles.
Methodology for Monthly Performance Report on Immunization Statistics

I. DPT Immunization for children (0-1 Years) 3rd Dose:
   a. Prop. Need Assessed during the current financial year: Prop. Need assessed are calculated:
      i. Live Birth = (Projected mid-year population X Crude Birth Rate)
      ii. Children 0-1 years = (Live Birth - (Live Birth X IMR)/1000
   b. Cumulative performance upto the month during current year
   c. Cumulative performance upto the month of last year
   d. % Change

II. POLIO (3rd Dose) 0-1 Years children: (same as per DPT above)

III. B.C.G. (One Dose) 0-1 Years children: -do-

IV. Measles (One Dose) 9-12 months: -do-

V. D.T. (Diptheria Tetanus) 5 Years 2nd Dose:
   a. Prop. Need Assessed during the current financial year: Prop. Need assessed are calculated:
      i. Projected mid-year population X proportion of children in the age of 5 years as per SRS Bulletin
   b. Cumulative performance upto the month during current year
   c. Cumulative performance upto the month of last year
   d. % Change
   e. % Achievement of prop. Need assessed

VI. T.T. (10 Years) 2nd Dose:
   a. Prop. Need Assessed during the current financial year: Prop. Need assessed are calculated:
      i. Projected mid-year population X proportion of children in the age of 10 years as per SRS Bulletin
   b. Cumulative performance upto the month during current year
   c. Cumulative performance upto the month of last year
   d. % Change
   e. % Achievement of prop. Need assessed

VII. T.T. (16 Years) 2nd Dose:
   a. Prop. Need Assessed during the current financial year: Prop. Need assessed are calculated:
      i. Projected mid-year population X proportion of children in the age of 16 years as per SRS Bulletin
   a. Cumulative performance upto the month during current year
   b. Cumulative performance upto the month of last year
VIII. Vitamin ‘A’ (Prophylaxis against blindness due to Vit ‘A’ deficiency) 1st dose and 2nd – 5th dose:

1st DOSE (0-1 YEARS)
- Annual Need Assessed (Total no. of Infants during current year)
- Achievement Cumulative (1st Dose) during current year
- Achievement of the same period during last year
- % Change
- % Achievement of Need assessed

2-5th DOSE (1-3 YEARS)
- Annual Need Assessed (Total no. of Children aged 1-3 Years during current year)
- Achievement Cumulative (2-5th Dose) during current year
- Achievement of the same period during last year
- % Change
- % Achievement of Need assessed of Vit ‘A’ (2-5 dose) worked out by taking (2 X 1.9 times) of Children (1-2 years)

* Earlier half of doses initiated, continuing and completed were taken to get the total no. of beneficiaries
<table>
<thead>
<tr>
<th><strong>IND. 9.</strong> NEW BORN WITH LOW BIRTH WEIGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale for use</strong></td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
</tr>
<tr>
<td><strong>Calculation:</strong></td>
</tr>
<tr>
<td><strong>Programmatic Goals</strong></td>
</tr>
<tr>
<td><strong>Associated terms</strong></td>
</tr>
<tr>
<td><strong>Data Sources</strong></td>
</tr>
<tr>
<td><strong>Method of Estimation</strong></td>
</tr>
<tr>
<td><strong>Desegregation</strong></td>
</tr>
<tr>
<td><strong>References</strong></td>
</tr>
</tbody>
</table>
**IND. 9. PROPORTION OF NEW BORN WEIGHED**

This reflects upon the quality of post partum care.

| Number of new born who are weighed immediately or within 2 days of delivery | X 100 |
| Total number of live births |

**IND.22. CRUDE BIRTH RATE**

| Rationale for use | Crude Birth Rate is the most important component growth in the country, since the difference between the CBR and CDR determines the natural growth rate of the population. CBR is the simplest and frequent used measure of period fertility, which requires minimum amount of information on the birth statistics. It is also indicator of Population Policy and RCH-2. |
| Definition | Indian definition: CBR is defined as a ratio of the total number of live births during a given year and a given geographical area to the average (or mid year) population ever lived in that year and geographical area. |
| **Unit of Measurement:** Number of live births per 1,000 population in a given year. |
| **Formula for Estimation:** |
| \[
\frac{\text{Number of Births in a given area over a given period}}{\text{Total Average Population in given area}} \times 1000
\]
| International definition: same as Indian definition |
| Data Sources | **Official Statistic:** Office of the registrar General of India, register all the births occurred in rural/urban areas of India regularly through the vital registration. |
| | Primary level agency: Village |
| | Flow of Data Village – District – State – Nations |
| | Periodicity: Annually |
| | **Sample Registration System** |
| | The data on births from the vital registration system of India are inadequate and inaccurate and to overcome this problem, Sample Registration System – a dual report system is developed by Registrar General of India. |
| | Estimates are available at state and national level. |
| | Periodicity : Half Yearly |
| | **Survey Statistics:** National Family Health Survey (NFHS), Multiple Indicator Cluster |
Survey (MICS), National Sample Survey,
In NFHS, MICS, NSS estimates of CBR are available at state and national level, whereas in
RCH-DLHS it is available at district level.

<table>
<thead>
<tr>
<th>Method of Estimation</th>
<th>Direct Method: CBR is estimated from the births collected by sample registration system. NFHS provides estimates of CBR for the three year period preceding the survey. Indirect methods: by applying reverse survival rates of 0-4 child population by sex to the census of population aged 0-4 by sex the number of births occurred during the past five years are estimated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desegregation</td>
<td>In location (rural/urban) district state and nation, Socio economic Characteristics such as education, religion, caste, Standard of living index</td>
</tr>
<tr>
<td>Reference</td>
<td>Census of India, SRS, NFHS, MICS, RCH-DLHS, NSS</td>
</tr>
</tbody>
</table>
**Rationale for use**
The TFR is one of the most useful indicators of fertility because it gives the best picture of how many children women are currently having. It is also an indicator of national Population Policy, RCH-2, MDG.

**Definition**
The total fertility rate (TFR) is the average number of children that would be born to a woman by the time she ended childbearing if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given year.

The TFR sums up, in a single number, the fertility of all women at a given point in time. In effect, it says: This is the total number of children a woman would have if the fertility rates for a given year applied to her throughout her reproductive life.

**International definition:** same as Indian

**Unit of Measurement:** Children per woman.

**Illustration: Calculating the Total Fertility Rate**

<table>
<thead>
<tr>
<th>Age of women</th>
<th>(1) Number of women</th>
<th>(2) Number of births to that age group</th>
<th>(3) Birth rate (2)/(1)</th>
<th>(4) Age-specific birth rate (3)x5</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>244,000</td>
<td>4,474</td>
<td>.018</td>
<td>.090</td>
</tr>
<tr>
<td>20-24</td>
<td>225,800</td>
<td>28,013</td>
<td>.124</td>
<td>.620</td>
</tr>
<tr>
<td>25-29</td>
<td>194,200</td>
<td>36,440</td>
<td>.188</td>
<td>.940</td>
</tr>
<tr>
<td>30-34</td>
<td>182,300</td>
<td>27,402</td>
<td>.150</td>
<td>.750</td>
</tr>
<tr>
<td>35-39</td>
<td>181,400</td>
<td>14,044</td>
<td>.077</td>
<td>.385</td>
</tr>
<tr>
<td>40-44</td>
<td>177,600</td>
<td>3,176</td>
<td>.018</td>
<td>.090</td>
</tr>
<tr>
<td>45-49</td>
<td>151,100</td>
<td>182</td>
<td>.001</td>
<td>.005</td>
</tr>
<tr>
<td><strong>Sum=</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>2.88</strong></td>
</tr>
</tbody>
</table>

The rates in column (3) simulate the likelihood of a woman giving birth during each year of her childbearing years—that is, they approximate the “risk” of having a birth. Multiplying each of these rates by five provides the number of children she would have for each five year period. Each woman is subject to the annual “risk” of a birth five times in each age group; for example, 0.124 when she is 20, 0.124 when she is 21 and so on. Summing the rates for all age categories results in the number of children she would have by age 49—the total fertility rate.
<table>
<thead>
<tr>
<th>Programmatic Goals</th>
<th>In developing countries with much higher mortality rates, TFRs higher than 2.1 are necessary to achieve replacement level. 13th Goal of NPP is to provide vigorously to achieve replacement level of TFR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRHM Goal:</td>
<td>TFR reduced to 2.1 by 2012.</td>
</tr>
</tbody>
</table>
| Associated terms | Age specific fertility curve would give age pattern of child bearing in any population.  
Age specific marital fertility rates, gross reproduction rates. |
| Data Source | **Official Statistics:** Sample registration System: TFR values are estimated from the sample registration system.  
Estimates of TFR is available for large states of India.  
**Survey Statistics:** NFHS, MICS, RCH-DLHS  
Estimates of TFR are available in NFHS, NSS, MICS are available at State and National Level, whereas in RCH-DLHS it is available at district level. |
| Method of Estimation | Direct method: In NFHS, the ASFR for any specific age grouping calculated by dividing by the number of births to women in the age group during the period 1-36 months proceeding the survey by the number of women lived by women in the age group during same three year time period. TFR is five times the sum of all ASFR’s for the five year age group.  
Indirect methods of estimation.  
Brass’s P/R ratio method (1968)  
Stable Population Model, Coale(1981)  
Palmore Method (1978)  
Gunasekaran-Palmore Method (1981)  
Rele’s method (1987) |
<p>| Desegregation | Location (urban/rural, district, state, nation), Socio-Economic characteristic such as education, occupation, religion, caste and standard of living index) |
| Reference | NFHS, MICS, NSS, RCH-DLHS. |</p>
<table>
<thead>
<tr>
<th>IND.24. INFANT MORTALITY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale for use</strong></td>
</tr>
<tr>
<td><strong>Definition</strong></td>
</tr>
<tr>
<td><strong>Formula for Estimation:</strong></td>
</tr>
<tr>
<td><strong>Unit of Measurement:</strong></td>
</tr>
<tr>
<td>Infant Mortality may be Sub-divided into neonatal deaths occurring during the first 28 completed days of the life and post neonatal deaths, occurring after 28 days but before 365 days.</td>
</tr>
<tr>
<td>International Definition:</td>
</tr>
<tr>
<td><strong>Programmatic Goals</strong></td>
</tr>
<tr>
<td>Goal of RCH II</td>
</tr>
<tr>
<td>To achieve the goal fourteen action plans have been set. These action plans ranges from focusing on neonatal health care and facilities.</td>
</tr>
<tr>
<td>NRHM Goal: IMR reduced to 30/1000 live births by 2012.</td>
</tr>
<tr>
<td><strong>Associated terms</strong></td>
</tr>
<tr>
<td><strong>Data Source</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
| **Method of Estimation** | Direct Methods: The IMR is computed in SRS as the number of deaths of infant under one year of age in indicated year per 1000 live births in the same year.  
In NFHS, IMR are obtained directly using birth history, IMR are estimated at five period proceeding survey.  
Indirect Methods: Estimation of Infant Mortality Rate from information on Children ever born and Children Surviving.  
Estimation of IMR based on regression methods.  
Estimation of IMR from the birth history of women (Rustein 1984). |
| **Desegregation** | By Sex, Location (Urban, Rural, District, State and Nation), Socio-demographic and economic variable such as age, birth order, birth interval education, occupation, religion and caste, Standard of living index. |
### Rationale for use
Neonatal deaths account for a large proportion of child deaths. Mortality during neonatal period is considered as a good indicator of both maternal and newborn health care.

### Definition
Indian Definition: Number of Deaths during the first 28 completed days of life per 1000 live births in a given year or period.
Neonatal deaths are divided into early neonatal deaths occurring during the first seven days of life and late neonatal deaths occurring after seventh day but before 28 completed days of life.

International definition: Same as Indian

**Formulae of Estimation:**

\[
\text{Number of deaths between birth and 4 weeks during the reference period} \times 1000 \\
\text{Estimated number of live births in the reference period}
\]

**Unit of Measurement:** Deaths per 1,000 live births

### Associated terms
The neonatal period commences at birth and ends at 28 completed days after birth.

### Data sources
Official Statistics: Estimates of neonatal mortality is derived from Sample Registration System for India and Bigger State.

Periodicity: Yearly

Special Fertility and Mortality Survey (SFMS) is conducted by the office of the Registrar General of India provides estimates for neonatal mortality rate.

Survey STATISTICS: NSS, NFHS, SFMS, RCH-DLHS, MICS

In NSS, NRHGS, SFMS, RCH-DLHS, MICS estimates of neonatal mortality are available at State and National level.

### Method of Estimates
The estimates of neonatal mortality rates at the national level and for major states of India are obtained by SRS annually.
In NFHS, NMR are estimated for five year period preceding the survey.

### Desegregation
Location (Urban/Rural) – State, Country, Socio-demographic and economic characteristics such as age of the mother, birth order, educational level, religion, caste, standard of living.

### References
Registrar General of India, NSS, SRS, SFMS, NFHS, MICS, RCH-DLHS.
### Rationale for use

U5MR is a common indicator for child survival programmes. U5MR may indicate programme impact more comprehensively than infant mortality rate (IMR) because it reflects results of child survival intervention focused on reducing mortality among infants as well as those that have the highest impact during the second and third year of life.

### Definition

Number of deaths among children under age five in a given year per 1,000 live births in that same year.

**Formulae of Estimation:**

\[
\text{Deaths per 1,000 live births} = \frac{\text{Number of child deaths up to 5 year of age in the reference period}}{\text{Estimated number of children between 0 and 5 years in the reference period}} \times 1000
\]

**Unit of Measurement:** Deaths per 1,000 live births

### Programmatic Goals

### Associated terms

Some confusion exists between the terms “under five mortality” and “child mortality.” Whereas U5MR refers to deaths by age five per thousand live births, child mortality refers to deaths by age five per thousand children who survived the first year of life (i.e. mortality among children ages one through four).

### Data Source

SRS, NFHS, RCH-DLHS.

Although figures for U5MR are typically reported for a specific year, calculations are usually based on a longer time period of three to five year. DHS surveys tend to estimate U5MR for the five year period preceding the survey.

### Method of Estimation

By Sex, Location (Urban, Rural, District, State and Nation)

### Reference

NFHS, RGI, MICS, RCH-DLHS.
IND.26 MATERNAL MORTALITY RATIO

### Rationale for use
Complication during pregnancy and child birth are leading causes of death and disability among women of reproductive ages such deaths are affected by various factors including general health status, education and services during pregnancy and child birth. It is important to monitor changes in health conditions related to sex and reproduction. It is also an important MDG and NPP indicator and also a goal in NRHM.

### Definition
**Indian definition:** The maternal mortality ratio is commonly defined as the number of women who die from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and child birth or within forty two days of termination of pregnancy per 100,000 live births.

The 10th revision of the international classification of disease makes provision for the including late maternal deaths occurring between six weeks and one year after childbirth.

**Formulae for Estimation:**

<table>
<thead>
<tr>
<th>Term</th>
<th>Formulae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of maternal deaths during pregnancy, delivery</td>
<td>( \text{Total number of live births in a given area and year} \times \frac{1}{100000} )</td>
</tr>
<tr>
<td>( \text{Number of maternal deaths during pregnancy, delivery} \times \frac{1}{100000} )</td>
<td>( \text{Number of maternal death to women (15-19 yr)} \times \frac{1}{100000} )</td>
</tr>
<tr>
<td>( \text{Number of maternal death to women (15-49 yr)} \times \frac{1}{100000} )</td>
<td>( \text{Number of live births to women (15-49)} )</td>
</tr>
<tr>
<td>( \text{Number of live living to women (15-49)} )</td>
<td>( \text{Number of live living to women (15-49)} )</td>
</tr>
<tr>
<td>Lifetime Risk of Maternal Death</td>
<td>( 1-(1-\text{MM_rate}/100000)^{35} )</td>
</tr>
</tbody>
</table>

Unit of Measurement: Maternal deaths per 100,000 live births.

Related Definitions:

- **Maternal Mortality Ratio (MMR):** \( \frac{\text{Number of maternal death to women (15-19 yr)}}{\text{Number of live births to women (15-49)}} \times 100000 \)
- **Maternal Mortality Rate (MM_rate):** \( \frac{\text{Number of maternal death to women (15-49 yr)}}{\text{Number of live living to women (15-49)}} \times 100000 \)

### Programmatic Goals
**Goals from NPP:**
Reducing maternal mortality ratio to below 100 per 100000 live birth by 2010 is one of the major goals of National Population Policy. A 17 point action plan has been set for achieving the said target. In these series of action plan empowering women, delivering health service at community level and programme modification are some of the innovative ideas.

**Goals form MDG:**
Maternal ell being is also a major component for millennium declaration. The
The fifth goal of MDG is to reduce maternal mortality ratio by three-quarter between 1990 and 2015. The declaration has set maternal mortality ratio and proportion of births attended by skilled health personnel are taken as the indicators for monitoring progress of the goal.

**NRHM Goal**: Mortality reduced to 100/100,000 live births by 2012.

<table>
<thead>
<tr>
<th>Associated terms</th>
<th>Maternal death is the death of a woman while pregnant or within forty-two days of termination of pregnancy. Maternal deaths are divided into two categories: Direct obstetric death is said to be deaths occurred directly from any obstetric complication of pregnant state from intervention, omission or incorrect treatment or chain of these events resulting deaths. Indirect obstetric death refers to death resulting from previous disease or developed during pregnancy and that as not directly to obstetric causes but was aggravated by the physiologic effect of pregnancy. ICD 10 introduced an additional category pregnancy related death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Source</td>
<td>NRHM is the ideal source. MMR can also be derived from vital registration systems (usually underestimated), community studies and surveys (requiring very large sample sizes) or hospital registration (usually overestimated). Sample Registration System has collected maternal mortality at all India level.</td>
</tr>
<tr>
<td>Method of Estimation</td>
<td><strong>Direct Methods</strong>: Measuring Maternal Mortality accurately is difficult except where comprehensive registration of deaths and causes of death exist. This method cannot be applied in India due to lack of reliable registration of deaths and causes of deaths. Reproductive age mortality studies (RAMOS) use triangulation of different sources of data on deaths of reproductive aged couple with record review and/or verbal autopsy to accurately identify maternal deaths. Estimates derived from household surveys (NIFHS, SRS) are subject to wide confidence intervals and long periods. <strong>Indirect methods</strong>: The Sisterhood method asks the respondents four simple questions about how many of their sisters reached adulthood and how many have died and whether those who died were pregnant around that time of death. The reference period of the estimate is at least 10-12 years before the survey.</td>
</tr>
<tr>
<td>Desegregation</td>
<td>All India.</td>
</tr>
<tr>
<td>Reference</td>
<td>SRS, Maribhat et.al, Joint WHO/UNFPA/UNICEF/WB Statement, Geneva</td>
</tr>
</tbody>
</table>
| **Rationale for use** | Total number of RTI/STI cases.  
Number of cases diagnosed in males females.  
Total Number of cases treated in males females  
Number of cases treated in males females.  
- Those persons in the reproductive age group of 15 to 44 yrs, having symptoms suggestive of an RTI/STI are recorded as cases.  
- Laboratory diagnosed cases as well as cases identified by syndromic management are included.  
- Cases which have been diagnosed at RCH camps, are also included.  
- Total number of cases treated included those persons diagnosed who hae availed of treatment. Given an indication about the treatment seeking behavior and quality of RTI/STI services. |
| **Definition** | **Prevalence of RTI/STI cases**  
Type: Coverage.  
1. Definition: The number of persons diagnosed with specific reproductive tract infections (RTIs) or sexually transmitted disease (STDs) at a given point in time per 100 persons in the target populations.  
2. Calculation:  
\[
\text{Total number of RTI/STI cases detected} \times \frac{100}{\text{Number of eligible persons in reproductive age group}}
\]  
Separate figures to know the proportion of among males and females cases may be calculated.  
Type : Quality  
**Proportion of RTI/STI cases treated**  
\[
\frac{\text{Total number of cases treated}}{\text{Total number of cases diagnosed}} \times 100
\]
<table>
<thead>
<tr>
<th><strong>IND. 29. PREVALENCE OF HIV INFECTION IN A DEFINED TARGET POPULATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale for use</strong></td>
</tr>
<tr>
<td><strong>Definition</strong></td>
</tr>
<tr>
<td><strong>Data Requirements:</strong></td>
</tr>
<tr>
<td><strong>Data Sources</strong></td>
</tr>
<tr>
<td><strong>Rationale for use</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
</tbody>
</table>
| **Definition** | **International Definition:**  
Percentage of children stunted is the percentage of children under 5 year old who have a height for age below minus two standard deviations from the median for international reference population (IRP)* of age 0-59 months. IRP is often referred as the NCH/WHO reference population.  
Percentage of children underweight: is the percentage of children under five year who have a weight-for-age below tow minus standard deviations of the NCHS/WHO reference median.  
Percentage of children wasted is the percentage of children under five year who have a weight for height below two minus standard deviations of the NCHS/WHO reference median.  
Each of these indicates provides some what different information about nutritional status of children. weight for age is a composite measure that takes into account both chronic and acute under nutrition. Height for age index measures linear growth retardation. Weight for height indicates the prevalence of acute under nutrition. |
| **Programmatic Goals** |  |
| **Associated terms** | Severely under weight or stunting or wasting is defined as below minus three standard deviations from median weight for age or height for age or weight for height of NCHS/WHO reference population. |
| **Data Source** | In NFHS, MICS and RCH-DLHS the three indicators of nutritional status are measure as the percentage of children underage 3 years. Estimates in NFHS, MICS are computed at state level, whereas in RCH-DLHS it is given at district level. |
| **Method of Estimation** | Empirical data from NFHS, RCH-DLHS are used. The weight/height of the under five child population in a country are compared with the weight/height given in the NCHS/WHO table of child weight/height for each age group. The percentage of children in each age group whose weight/heights are more than 2 standard deviations less than the median are then aggregated from the total percentage of children under age five are under weight/stunted. |
| **Desegregation** | Location (rural/urban), Socio-demographic economic characteristics (mother height and mother body mass index, mother education, mother work status, religion, caste and standard of living index) |
| **Reference** | NFHS, RCH-DLHS, MICS. |
The international reference population was formulated by the National Centre for Health Statistics as a reference to United States and later adopted by the World Health Organisation (WHO) for international use (often referred as the NCHS/WHO reference population.)
Growth Monitoring & Degrees of Malnutrition

Growth monitoring is an important method to keep a close watch on the growth of a child, for immediate identification of malnutrition and prevention from malnutrition. Growth monitoring starts from birth. Health Service Provider/ANM/AWW should necessarily weigh the child at the time of birth, child grows very fast during first three years. Children up to the age of three years should be weighed every month, during three to six years every third month and severely malnourished child should be weighed every fortnight, if possible. If it is not possible then their weight should be taken every month.

Mainly Growth Monitoring has following five steps:

1. Knowing the correct age of child.
2. Weighing the child correctly.
3. Recording correct weight of the child in the Growth Chart.
4. Assessing growth of the child with the help of Growth Chart.
5. Counseling the mother/family about the child’s growth.

Why Growth Monitoring important:

- Medium level malnutrition is the cause of death for approximately half the children below 5 years of age. This weakens the immune system of body and makes disease severe.
- Even mild and medium malnutrition has serious consequences. Four or more deaths out of five happens because of mild (first grade) and medium (second grade) malnutrition and not because of severe (third and fourth grade) malnutrition, maximum damage form malnutrition is caused in the second year of life. Therefore, growth monitoring should be done every month for all the children below 3 years of age.
- If nutritional care of sick and malnourished children is ignored then the risk of complication becoming handicapped and dying increases.
- The brain requires food for development. Children cannot learn and grow unless they get good nutrition.

Monthly expected increase in the weight of children.

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>(Monthly Expected Increase in Weight in gms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth to 6 months</td>
<td>More than 500 gms</td>
</tr>
<tr>
<td>7-12 months</td>
<td>300-400 gms.</td>
</tr>
<tr>
<td>1-3 years</td>
<td>200 gms.</td>
</tr>
</tbody>
</table>
Degree of Malnutrition is determined from the growth chart on the basis of age and weight of a child. There are four grades of malnutrition.

Normal Grade

**Grade I** (MILD)

**Grade II** (MEDIUM)

**Grade III**

**Grade IV** (SEVERE)

Age-weight chart should be prepared for every child so that necessary action can be taken will time.

The Growth Chart has four lines indication grades of malnutrition form Grade I to Grade IV. When weight is recorded on the Growth Chart, it falls somewhere between or above these lines. This dot indicates the grade of malnutrition or if a child is growing normally. But this alone is not sufficient. For reaching any conclusion the current weight should be compared with the last weight of the child. Only then is a conclusion possible. Therefore keep in mind the last weight on the growth curve.

If weight of child is increasing continuously then it is a good sign. It is possible that child was malnourished but now continuous increase in weight shows that his/her health and nutrition level is improving continuously. Therefore, this is a good sign.

If weight of child is constant since last 203 months and there is no growth in him/her then it is a matter of concern. Try to find out its reason:

- It is possible that child is not receiving proper food. This condition comes many times after 6 months of age when mothers milk is not sufficient for him/her and he/she is not taking supplementary feeding. In this situation weight increase stops.

- It is also possible that child was suffering from some illness. Proper attention was not given towards his/her nutrition during sickness or after getting well. In this situation chance of becoming malnourished increase, therefore this is a matter of concern.

- The child may have worms. In this case, inform mother her about giving mebendazole tablets and give child tablets. (do not give it to child below 2 year of age).

If child is not growing for 2 consecutive months or its declining rapidly then this is a matter of concern. It increases the chance of becoming malnourished. There is a chance that a malnourished child becomes
more malnourished. Therefore try to find out the reason from child’s mother and accordingly advise for care and treatment.

Illustration:

Raman Chand was born on August 15, 2001 and his weight at the time of birth was recorded as 2.6 kg. The following table provides information on Raman Chand’s weight at various ages. Please plot these details on a growth chart and decide possible grades of nutrition.

<table>
<thead>
<tr>
<th>Name: Raman Chand</th>
<th>Date of Birth: August 15, 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of Child</td>
<td>Weight of Child</td>
</tr>
<tr>
<td>0 Month</td>
<td>2.6 k.g.</td>
</tr>
<tr>
<td>1 Month</td>
<td>3 k.g.</td>
</tr>
<tr>
<td>3</td>
<td>3.5 k.g.</td>
</tr>
<tr>
<td>6 Month</td>
<td>5 k.g.</td>
</tr>
<tr>
<td>9 Month</td>
<td>6 k.g.</td>
</tr>
<tr>
<td>18 Month</td>
<td>7 k.g.</td>
</tr>
<tr>
<td>2 year</td>
<td>8 k.g.</td>
</tr>
<tr>
<td>3 year</td>
<td>10 k.g.</td>
</tr>
<tr>
<td>5 year</td>
<td>14 k.g.</td>
</tr>
</tbody>
</table>