Estimating child mortality

Workshop on data analysis and report writing for civil registration based vital statistics

Nadi, Fiji
30 January – 03 February 2023
Infant and Child mortality

- Infant mortality rate (IMR) and Under five mortality rate (U5MR) are important indicators for development
- IMR and U5MR are key indicators of Goal 3 of the sustainable development goals targeting good health and wellbeing

**SDG 3: Ensure healthy lives and promote well-being of all at all ages**

**Target 3.2:** By 2030, reduce neonatal mortality to at least 12 per 1,000 live births and under 5 mortality to at least 25 per 1,000 live births.

- Many of the causes of death in these age-groups are amenable to interventions
Life expectancy and infant mortality

Source: Australian Bureau of Statistics Life Tables, States, Territories and Australia 3302.0.55.001
Measures of infant and child mortality
Neonatal mortality rate

- Neonatal mortality rate (NNMR) =
  \[
  \frac{\text{Number of deaths in infants aged less than 28 days in a specified time period}}{\text{Number of live births in the same time period}} \times 1000
  \]

- May be subdivided into:
  - *early* neonatal deaths, occurring within 0-7 days of life,
  - *late* neonatal deaths, occurring between 8-28 days of life.

- Considered to be a useful indicator of maternal and newborn health and care.
Infant mortality rate

- Infant mortality rate (IMR, $q_0$)

Number of deaths in infants aged less than one year old in a specified time period
\[
\text{Number of live births in the same time period} \times 1000
\]

- Measures such as IMR and NNMR should always be aggregated over several years and reported with confidence intervals due to the small population size and subsequent instability in these measures.
- Trends should be evaluated over the longer term rather than year to year.
## Major causes of infant mortality

<table>
<thead>
<tr>
<th>Neonatal Period</th>
<th>Post -neonatal Period</th>
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<tbody>
<tr>
<td>- Birth complications</td>
<td>- Malnutrition</td>
</tr>
<tr>
<td>- Prematurity and other developmental conditions</td>
<td>- Infectious Diseases</td>
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<tr>
<td>- Congenital conditions</td>
<td>- (External causes- accidents and injuries)</td>
</tr>
<tr>
<td>- (Malnutrition)</td>
<td></td>
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<tr>
<td>- (Infectious diseases)</td>
<td></td>
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<tr>
<td>- Conditions in mother are key</td>
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- As IMR falls and fewer deaths are attributed to infectious diseases and environmental influences, a greater proportion of infant deaths would be expected to occur in the neonatal period. - The neonatal mortality rate should not increase as this occurs.
Under five mortality rate

- Under five mortality rate ($U5MR, {}_5q_0$) =

\[
\frac{\text{Number of deaths in children aged less than five in a specified time period}}{\text{Number of live births in the same time period}} \times 1000
\]

- Also a very widely used indicator to compare between countries and over time.
- Used to reflect the economic, social, and health conditions in countries.
- As with IMR and NNMR, although called a rate, this is actually a probability of dying.
- An important summary measure of development as it looks at the overall impact of mortality on early childhood.
Assessing your data for plausibility

- Infant and child deaths may be under-reported
  - Why would this be?
    - *Is this possible in the local context*

- Need to compare to other sources
  - Census/ DHS etc

- Are the proportions plausible?
  - What proportion of the infant deaths are neonatal?
    - *Is this consistent with what you know of your health system?*