Immunization coverage: children

Rationale

- Vaccination programs are one of the priority interventions in all countries. All children should have all vaccinations everywhere.
- More vaccines are added to the schedules in many countries, as they become available.

Experience and evidence

- Experience
  - Hundreds of national surveys have been conducted using fairly standardized approaches including DHS, MICS, national immunization coverage surveys, socioeconomic surveys: extensive since the late seventies.
  - Economic surveys tend to use very short sets of questions and may not including retrieval of the child health card during the interview. This affects the comparability of such immunization coverage estimates.
  - WHO has developed a standard instrument which includes the questionnaire and full instructions for a stand-alone immunization coverage survey.¹

- Evidence
  - There have been a few studies to ascertain the quality of survey data. Some have focused on the quality of mother’s recall and generally the results do not indicate systematic biases². The results showed fairly good accuracy of mother’s recall of specific vaccinations though reliability may vary depending on a range of survey related factors and the changing complexity of vaccination schedules.
  - A few studies with serological testing have assessed seroconversion, such as following tetanus or measles vaccination. The results of these studies however assess both the accuracy of the recorded or reported vaccination as well as the efficacy of the vaccine. It is noted that the latter is usually below 100%. Biomarkers of seroconversion are potentially useful to estimate population level protection but may not serve particularly well to validate vaccination program performance or coverage³.
  - Comparisons have been conducted between health facility based estimates and population survey data. Quality issues are more likely to occur with the health facility-based estimates. In general, however, there is reasonable consistency between the two methods.

Plausibility: Hundreds of survey applications have shown consistency of results in space and over time in multiple settings. This includes comparability of results across populations.

Short / core module

- The standard survey module has been developed by WHO’s EPI coverage surveys and DHS, and is used by DHS, MICS and many other surveys. It has been almost unchanged in several decades.
- There is no short module to obtaining accurate immunization information. The only option would be to focus on selected vaccines but this will have little impact on the length of the module.
- Respondents are women 15-49 years of age and questions are asked about their own children (and about other children that they for whom they are the primary caretakers). The information is collected for all children under age 5, although most analyses focus on children age 12-23 months to better reflect children who have reached the age by which they should be fully vaccinated. Information is not collected for children who are deceased.
- Information on vaccination coverage is obtained in two ways—from health cards and from mothers’ verbal reports:
  - Health card: all respondents mothers are asked to show the interviewer the health cards that recorded the child’s immunisation history. If the card is available, the interviewer copies the dates of each vaccination.
  - Mother’s recall: If the mother is not able to present a card for a child, she is asked to recall whether the child had received BCG, polio, DPT or pentavalent, and measles vaccines. If she indicated that the child had received the polio or DPT-HB/DPT-HB-Hib vaccines, she was asked about the number of doses that the child received. For mothers who showed a card, if a vaccination was not recorded on the card, the mother is also asked to recall whether that particular vaccination had been given.
- Immunization coverage rates at 12-23 months are usually disaggregated by sex, place of residence, and socioeconomic status. The numbers of children in this small age group are usually small, and disaggregating by variables with too many categories is not possible.
- Indicators
  - Proportion of children aged 12-23 months who have received a specific vaccination: three doses of pentavalent / DTP / PCV / Rotavirus / polio (first, second third dose); measles; BCG; fully immunized
- Questions / module
### Section 8: Child Immunization and Health Checkup

**501** Enter in the table the line number, name, and survival status of each birth in 2005 or later. Ask the questions about all of these births, begin with the last birth. (If there are more than 3 births, use last 2 columns of additional questionnaires).

<table>
<thead>
<tr>
<th>Line Number</th>
<th>Birth History</th>
<th>Second-Final Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 2/2 and 2/10</td>
<td>Name</td>
<td>Name</td>
</tr>
</tbody>
</table>

- **NAME**:
  - **LIVING**:
  - **DEAD**:

- **Cage**: (Go to 5/13 in next column or, if no more births, go to 5/73)

**503A** Did (NAME) received vitamin A like the during the last 6 months? (Show capsules)

- Yes: 1
- No: 2
- Don’t know: 8

**503B** Where did (NAME) get the drops? During the campaign with other children, during a sick visit or during a health visit?

- Vaccine campaign: 1
- Sick visit: 2
- Healthy visit: 3

**504** Do you have a card where (NAME) vaccinations are written down?

- Yes, seen: 1
- Yes, not seen: 2
- No card: 5

**506** Copy vaccination date for each vaccine from the card.

1. Write X in the column if no date is recorded.
2. If more than two vitamin A doses, record dates for most recent and second most recent doses.

#### Vaccination Schedule

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Last Birth</th>
<th>Next-To-Last Birth</th>
<th>Second-from-Last Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td></td>
<td>BCG</td>
<td>BCG</td>
</tr>
<tr>
<td>Polio 0</td>
<td></td>
<td>Polio 0</td>
<td>Polio 0</td>
</tr>
<tr>
<td>Polio 1</td>
<td>P1</td>
<td>P1</td>
<td>P1</td>
</tr>
<tr>
<td>Polio 2</td>
<td></td>
<td>Polio 2</td>
<td>Polio 2</td>
</tr>
<tr>
<td>Polio 3</td>
<td>D1</td>
<td>D1</td>
<td>D1</td>
</tr>
<tr>
<td>DPT-HB1</td>
<td></td>
<td>DPT-HB1</td>
<td>DPT-HB1</td>
</tr>
<tr>
<td>DPT-HB2</td>
<td></td>
<td>DPT-HB2</td>
<td>DPT-HB2</td>
</tr>
<tr>
<td>DPT-HB3</td>
<td></td>
<td>DPT-HB3</td>
<td>DPT-HB3</td>
</tr>
<tr>
<td>Measles</td>
<td></td>
<td>Measles</td>
<td>Measles</td>
</tr>
<tr>
<td>Vitamin A</td>
<td></td>
<td>Vitamin A</td>
<td>Vitamin A</td>
</tr>
</tbody>
</table>

**506A** Check box:

- BCG to Measles
  - All recorded: 
- Other

- BCG to Measles
  - All recorded: 
- Other

- BCG to Measles
  - All recorded: 
- Other
**Additional indicators**

- Vaccination coverage by 12 months: survey coverage by age 12 months is most comparable facility data based estimates of immunization coverage which focus on vaccinations given to infants. Information on dates of vaccination is obtained from the vaccination card or if there is no written record, from the mother. For children whose information is based on the mother’s report, the proportion of vaccinations given during the first year of life was assumed to be the same as for children with a written record of vaccinations. Using the age
cohorts 12-23, 24-35, 36-47, and 48-59 months a time trend in vaccination status by 12 months can be obtained.

- Drop out rates (DTP1 – DTP3, DTP1 – measles): dropout of vaccination between first and third DTP vaccination, or DTP1 and measles vaccinations

### Main Indicator definitions

<table>
<thead>
<tr>
<th>Name</th>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunization coverage among 12-23 months old by vaccine (pentavalent / DTP / PCV / Rotavirus / polio / BCG / measles)</td>
<td>Number of children 12-23 months who have received the relevant vaccinations</td>
<td>Total number of children 12-23 months</td>
</tr>
<tr>
<td>Proportion of children aged 12-23 months who have received all recommended vaccinations</td>
<td>Number of children 12-23 months who have received all recommended vaccinations</td>
<td>Total number of children 12-23 months</td>
</tr>
<tr>
<td>Proportion of children 12-23 months (or older) who have received the specific vaccinations by age 12 months</td>
<td>Number of children who received the specific vaccination by 12 months</td>
<td>Total number of children 12-23 months</td>
</tr>
<tr>
<td>Proportion of children 12-23 months who dropped out of vaccination between first and third DTP vaccination (or DTP1 and measles vaccinations)</td>
<td>Difference between DPT3 and DPT1 coverage</td>
<td>DPT1 coverage</td>
</tr>
</tbody>
</table>