

03 April 2014

Dear Dr Sunita Kishor and Dr Attila Hancioglu:

Results from the USAID-supported Demographic and Health Surveys (DHS) and UNICEF supported Multiple Indicator Cluster Surveys (MICS) have provided invaluable information over the years not only to national Ministries of Health and Development but also to the broader international immunization community of researchers, policy makers and those providing technical and financial support to national immunization systems. We would like to express our appreciation for your continued efforts and would like to suggest some changes to the collection, analysis and presentation of the immunization information resulting from your surveys. As you may know, the immunization landscape is changing significantly with the increased availability of new vaccines, new national and international initiatives and new sources of funding.

In September 2012 the WHO and UNICEF working group for monitoring immunization coverage held a consultation with representatives of ICF International, the Global MICS coordinator and other UNICEF staff, and epidemiologists and statisticians from the United States of America’s Centers for Disease Control and Prevention to review the use of household and community surveys to monitor immunization programme performance. We attach a copy of the consultation report for your convenience. Below we submit for your consideration recommendations from this consultation and additional reflections that we feel would improve the usefulness of your surveys for monitoring immunization programme performance.

1. **Search local facility registries for documented evidence of vaccinations:** Traditionally information on the child’s vaccination history has been based on home-based records (e.g., vaccination card, child health card, etc.) and the recall of the child’s caretaker. In some countries, the child’s health card may be retained at the local health center. In almost all instances, a record of the child’s vaccination history is recorded in a facility register. We recommend that survey teams consider routinely searching local health care facility records for evidence of the sampled child’s immunization history to increase the proportion of vaccinations that are based on documented evidence.
2. **Analysis and presentation of multiple age cohorts:** While DHS and MICS surveys have usually collected immunization information on children under five years of age, the standard survey report presents information on the cohort of children 12-23 months of age to reflect the most recent system performance of infant immunization. Increasingly, national schedules include doses recommended at older age and the selection of the appropriate cohort(s) for analysis have been problematic. Rather than modify the cohort age selection (e.g., from 18-29 months of age rather than 12-23 months) to capture vaccinations recommended at or after 12 months of age, we recommend presenting the immunization information using multiple age cohorts if necessary. For vaccinations recommended up to 12 months of age we recommend reporting on coverage in the 12-23 months of age cohort; the current practice. For vaccinations recommended between 12-23 months of age, we recommend reporting coverage on the cohort of children 24-35 months of age. For vaccinations recommended between 24-35 months of age, coverage should be presented for the children 36-47 months of age.

For example, if BCG is recommended at birth, DTP and polio at 6, 10, and 14 weeks, a first dose of measles at 12 months of age and a second at 24 months of age, coverage could be presented as below.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Children aged | **12-23 m** | | | | | | **24-35m** | | **36-47m** | |
|  | **BCG** | **DTP1** | **polio1** | **DTP3** | **polio3** | **n12-23** | **MCV1** | **n24-35** | **MCV2** | **n36-47** |
| Vaccinated by card or facility register | 85% | 83% | 81% | 66% | 66% | 800 | 64% | 900 | 58% | 1000 |
| Vaccinated by maternal recall | 5% | 5% | 7% | 10% | 9% | 200 | 10% | 300 | 12% | 200 |
| Vaccinated by either source | 90% | 88% | 88% | 76% | 75% | 1000 | 74% | 1200 | 70% | 1200 |
|  |  |  |  |  |  |  |  |  |  |  |
| Age appropriate vaccination\* | 88% | 85% | 85% | 72% | 72% | 1000 | 72% | 1200 | 70% | 1200 |

The “age appropriate vaccination” (last row in the table above) would reflect coverage by 12 months of age in the 12-23 months cohort for vaccinations recommended between 0-11 months of age, by 24 months of age in the cohort 24-35 months of age for vaccinations recommended 12-23 months of age and by 36 months of age in the cohort 36 – 47 months of age for vaccinations recommended 24-35 months of age.

One could also consider presenting the age appropriate coverage for the older cohorts as well.

1. **Addition of inactivated polio vaccine (IPV) to national schedules:** Most low and middle income countries currently recommend three (in some instances four) doses of oral polio vaccine (OPV) in infancy. In November 2013, WHO’s Strategic Advisory Group of Experts on Immunization (SAGE) recommended that countries introduce one dose of IPV at the same time as the third dose of OPV and DTP-containing vaccine (<http://www.who.int/wer/2014/wer8901.pdf?ua=1>; accessed 21 March 2014). Widespread adoption of this recommendation is expected in 2014 and 2015 and will constitute an additional injectable vaccine in recommended infant immunization schedules. Documenting coverage of this dose will be important in monitoring compliance and progress towards polio eradication.
2. **Hepatitis B birth dose within twenty-four hours of birth:** Currently, WHO recommends that a dose of Hepatitis B vaccine be administered as soon as possible following birth and preferably no later than the first 24 hours of life to prevent perinatal transmission of the hepatitis B virus <http://www.who.int/wer/2009/wer8440.pdf?ua=1>; accessed 21 March 2014). We recommend presenting hepatitis B birth dose coverage as those doses which are administered on the same or subsequent day as the birth. While a vaccination whose administration date coincides with the birth date may be assumed to meet the criteria as a birth dose, we recognize that a vaccination given on the day after birth can be up to 23 hours late and some overestimation of vaccination within twenty-four hours is inevitable. In cases of maternal recall, it is unclear whether it is better for the interviewer to prompt the mother to recall the hour of hepatitis B vaccination or simply the date. It is quite possible that the mother, while present at the time of birth, would not necessary know the date/time of vaccine administration. Furthermore, we understand that date of birth is not always available, or if available, it is not always reliable and that data are frequently collected for month and year of birth without including the precise date. We do recommend, however, that whenever possible an attempt to determine whether the first dose of hepatitis B was given during the first twenty-four hours of life be made and reported.
3. **Human papillomavirus vaccine (HPV) recommended for girls nine through twelve years of age:** Human papillomavirus is a major cause of cervical cancer and WHO recommends that HPV be included in national immunization schedules if prevention of cervical cancer is a public health priority, vaccine introduction is programmatically feasible, and sustainable financing can be secured (<http://www.who.int/wer/2009/wer8415.pdf?ua=1>; accessed 21 March 2014). While the vaccine remains relatively expensive, the GAVI Alliance is supporting HPV introduction in low income countries (<http://www.gavialliance.org/support/nvs/human-papillomavirus-vaccine-support/>; accessed 21 March 2014). Information on the date and age of HPV administration among women fifteen years of age at the time of survey would provide invaluable information on the coverage of HPV vaccination. In some instances this may require consideration of oversampling this age group in order to obtain a robust coverage estimate.
4. **Presentation of home-based vaccination record receipt:** Currently information on whether a child ever had a vaccination card is asked as part of the questionnaire, but this information is not presented in standard published summaries. As the number and cost of the vaccinations recommended increases, it is becoming increasingly important that good recording and reporting practices are followed to ensure children are fully but not over vaccinated. Information on whether a child ever had a vaccination card would be useful information in addition to the currently presented data on whether a card was seen or not.
5. **New vaccines, schedules, combinations, delivery strategies:** In addition to the above suggestions, we would like to bring to your attention several additional features that are occurring more frequently that may warrant your attention.
   1. A second dose of measles containing vaccine is recommended in all countries and a combination measles-mumps-rubella (MMR) vaccine is the recommended presentation. In some instances appropriate vaccination may be considered a single dose of measles vaccine at nine months of age may be appropriate in some cohort while a dose of MMR at 12 and 18 months of age may be appropriate in younger cohorts.
   2. Pneuomococcal vaccine is being increasing recommended and is a three dose injectable vaccine with administration recommended at six, ten and fourteen weeks of age. In many cases this vaccine will be administered during the same visit with a DTP-containing vaccine and determination of which vaccination was given during a visit may be difficult in the absence of documented evidence.
   3. Rotavirus vaccine is a live oral vaccine available in a two dose schedule (Rotarix from GlaxoSmithKline Biologicals) recommended at six and ten weeks of age and a three dose schedule (Rota Teq from Merck and Company) recommended at six, ten and fourteen weeks of age. Either vaccine may be given during the appropriate DTP-containing vaccine visit.
   4. Routine and supplemental delivery strategies: While routine vaccinations delivered at fixed sites, in outreach activities or by mobile teams remains the principle delivery strategy, supplemental activities to increase coverage or to provide additional population protection are becoming more frequent. In some instances separate cards are issued to children reached during supplemental activities. To the degree possible it would be useful to attempt to capture and report on coverage achieved through different strategies.
   5. Multiple vaccination schedules in the study cohorts. As alluded to above, a significant challenge to the accurate recording, analysis and reporting of immunization data is related to changing national immunization recommendations, the introduction of new vaccines in the schedule and the use of new combination vaccines creating mixed immunization schedules within the study cohort. Such mixed schedules will require improved training of interviewers to correctly interpret and record vaccination records and to elicit an accurate report of a child’s vaccination history. Additional vaccinations will require more creative and pointed probes to capture which vaccinations have been received. We are encouraging national immunization programme managers to prepare appropriate material for training survey teams and will gladly provide whatever information we have to improve the survey’s ability to accurately capture the appropriate information.

In conclusion, we would like to reiterate our appreciation for your efforts and for the opportunity to suggest modifications that we feel would ensure the continued usefulness of your activities to national Ministries of Health and their local, national and international partners.

Sincerely yours,

WHO and UNICEF Working Group for

Monitoring Immunization Coverage

|  |  |
| --- | --- |
| Anthony H. Burton and Marta Gacic-Dobo  World Health Organization  Geneva  Switzerland | David W. Brown and Rouslan Karimov  United Nations Children’s Fund  New York, New York  USA |