



GOAL 3

Ensure healthy lives and promote well-being for all at all ages

TARGET 3.8

Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

TARGET 3.B

Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.

Target overview

SDG monitoring

SDG target 3.8 includes the following indicators:

- 3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)
- 3.8.2 Proportion of population with large household expenditures on health as a share of total household expenditure or income

SDG target 3.b includes the following indicators:

- 3.b.1 Proportion of the target population covered by all vaccines included in their national programme
- 3.b.2 Total net official development assistance to medical research and basic health sectors
- 3.b.3 Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis

This briefing note focuses on indicators 3.8.1 and 3.b.1.

Broader monitoring context

The concept of universal health coverage means that all people receive the health services they need, and that those services are high quality, while at the same time ensuring that the use of these services does not expose the user to financial hardship. One critical building block to universal health coverage and ending preventable child deaths (Target 3.2) is vaccinations.



Universal health coverage, as an articulated and quantifiable public health target, is a newly developed concept and work on its measurement is still ongoing. While the two global SDG indicators are universally important, they are a subset of the indicators needed to monitor progress towards Target 3.8, which draws on a wider range of established indicators, often tailored to specific regions and countries. “Full vaccination coverage” as defined in indicator 3.b.1 is also challenging to monitor given the variation in vaccination schedules both over time and across countries. Therefore, this indicator may also need to evolve over time to better reflect access to all WHO recommended vaccines and potential future changes in the recommendations, as new vaccines continue to become available.

UNICEF role in monitoring

SDG Targets 3.8 and 3.b correspond to UNICEF’s Strategic Plan Goal Area 1 (Every Child Survives and Thrives). Over the past two decades, UNICEF has supported countries in monitoring indicators related to the health of children and mothers and UNICEF is playing an active monitoring role across SDG 3. While WHO is the designated custodian agency for both SDG 3.8 indicators, UNICEF is a partner agency with UNFPA and UN DESA (Population Division) for 3.8.1 and the World Bank partners on 3.8.2. UNICEF is a co-custodian agency, together with WHO on Indicator 3.b.1. In addition to these global SDG indicators, UNICEF will continue to highlight a broader range of indicators that highlight specific coverage interventions for reproductive, maternal, newborn, child, and adolescent health.

General information and resources

- UNICEF data: <https://data.unicef.org/>
- UNICEF Multiple Indicator Cluster Surveys (MICS): <http://mics.unicef.org>
- SDG indicators: <https://unstats.un.org/sdgs/>

For further information, please contact the health focal point at the Data & Analytics Section at UNICEF HQ via: data@unicef.org



INDICATOR 3.8.1

Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)

Description

Definition and key terms

The coverage of essential health services is defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases and service capacity and access, among the general and the most disadvantaged population).

A new measure—universal health coverage index (UHC index)—has been developed to track this indicator. This is a newly developed indicator and the methodology may continue to evolve. Specifically, the UHC service coverage index is a composite indicator that is computed based on tracer indicators (some of which are proxies of service coverage) to monitor coverage of essential health services. Essential health services are services that all countries, regardless of their demographic, epidemiological or economic profile, are expected to provide.

The service coverage index is constructed¹ from subindices representing the four categories specified in the definition of indicator 3.8.1. Each subindex includes four tracer indicators.

REPRODUCTIVE, MATERNAL, NEWBORN AND CHILD HEALTH	1. Family planning	Demand satisfied with modern method among women 15–49 years who are married or in a union (%)
	2. Pregnancy and delivery care	Antenatal care 4+ visits (%) ²
	3. Child immunization	One-year-old children who have received 3 doses of diphtheria-tetanus-pertussis vaccine (DTP3) (%)
	4. Child treatment	Care-seeking behaviour for children with suspected pneumonia (%)
INFECTIOUS DISEASES	1. Tuberculosis treatment	TB effective treatment coverage (%)
	2. HIV treatment	People living with HIV receiving ART (%)
	3. Malaria prevention	Population at risk sleeping under insecticide treated bednets (%)
	4. Water and sanitation	Households with access to at least basic sanitation (%)
NON-COMMUNICABLE DISEASES	1. Prevention of cardiovascular disease	Prevalence of normal blood pressure, regardless of treatment status (%)
	2. Management of diabetes	Mean fasting plasma glucose (FPG), (mmol/L)
	3. Cancer detection and treatment	Cervical cancer screening among women aged 30–49 years (%)
	4. Tobacco control	Adults aged ≥15 years not smoking tobacco in last 30 days (%)
SERVICE CAPACITY AND ACCESS	1. Hospital access	Hospital beds per capita (w/ threshold)
	2. Health worker density	Health professionals per capita (w/ threshold): physicians, psychiatrists and surgeons
	3. Access to essential medicines	Proportion of health facilities with WHO recommended core list of essential medicines available
	4. Health security	International Health Regulations core capacity index

¹ For more information on the calculation of the index, please refer to Tracking Universal Health Coverage: 2017 Global Monitoring Report, page 10.

² Number of ANC visits captures contact with the health system but does not capture quality of care received and may not lead to improved mortality outcomes. This is an example of an indicator that may be replaced in the future, as UNICEF/WHO with SDG 3.1.2 (births attended by skilled health personnel) as UNICEF/WHO efforts to improve comparability are successful.



Key terms:

- Tracer indicators are a subset of indicators chosen to represent overall coverage.
- Proxy indicators are used to reflect important areas of service coverage for which no robust indicator are available.

National data sources

Common primary data sources used for indicators of service coverage include household surveys, facility data and other administrative data.

Nationally representative, population-based surveys are often the best source as they can enable the measurement of those who need an intervention, in addition to counting those who already receive it, and allow for the disaggregation of service coverage by different subpopulations for equity analysis. MICS and DHS are particularly important sources of data for all of the RMNCH indicators included in the UHC index as well as ITNs and basic sanitation.

The use of facility data or other administrative sources presents challenges as they may capture the number of people receiving a service (the numerator) but fail to count all those who need a service (the denominator), and typically do not collect variables relevant for equity analyses other than geographical location. They may also be subject to reporting incentives. However, an advantage of administrative data sources is that they are often reported at least annually through routine systems, and therefore provide more timely data than household surveys, which are typically conducted every three to five years.

Using the indicators

Interpretation

The UHC coverage index has recently been constructed to provide some insight into a population's access to and use of health services, and should be interpreted together with indicator 8.3.2, which provides insight into the aspect of financial hardship. It is thus a useful summary measure that provides an overall indication of coverage of health services. It does not, however, fully depict health services provided to children and mothers and should not be interpreted as a comprehensive summary measure when talking about RMNCAH issues.

When considering the UHC coverage index, it is important to keep in mind the following specific points:

- These tracer indicators are not a recommended basket of services; rather they are chosen to capture the breadth of health services within UHC in a measurable way and selection criteria largely depended on data availability.
- There is a potential risk that the index obscures lack of progress for specific child and maternal health interventions because of the averaging effect across indicators.
- Although quality of care is implicit in the concept of universal health coverage, it is not captured in the UHC coverage index.
- Proxy measures like hospital bed density, physician density, as well as alternatives like service utilization rates, are difficult to interpret as the optimal level for these indicators is unclear and they do not relate to a specific need for services. Despite this, low levels for these indicators are indicative of poor access and use of essential health services. Thus, this indicator should not be interpreted as representing actual population coverage of essential health services, which is challenging to measure.

Given the current measurement of UHC, it is important to interpret indicator values within a broader range of available data. This is particularly true if there is interest in understanding particular sets of health services such as those provided to mothers, newborns and children.

Disaggregation

This indicator can only be disaggregated by the four categories of service coverage. Thus, it is necessary to illustrate inequalities using a subset of indicators, particularly for the RMNCH indicators measured through household surveys.

This point reinforces the importance of looking across a broader range of indicators, which can be disaggregated by key stratifiers, which include place of residence, geographic location, household wealth, and education.



Common pitfalls

In addition to the points raised in the interpretation section above, there are a number of key challenges posed by this indicator.

One implication of having an indicator with an evolving methodology is that it will be difficult to track trends for some time. Although this builds on a previous methodology introduced in 2015, this is the current approach to measuring UHC coverage, presented by WHO and the World Bank in 2017, and cannot be compared to the previous estimates. Furthermore, some of the indicators currently included in the index may be subject to change. Data availability was a major consideration in developing the final list of indicators, with the expectation that substitutions will be made as new data become available.

The fact that the index is constructed using data from different sources, with data collected at different times, could mean that it will be difficult to monitor frequently. It is anticipated that a minimum period of five years is likely to be needed to reliably measure national changes in the index.

Monitoring and reporting

National

Ministries of health

Global

Agencies: WHO

Note that WHO is the designated custodian agency for both SDG 3.8 indicators, with UNICEF, UNFPA and UN DESA (Population Division) as partner agencies for 3.8.1 and the World Bank for 3.8.2.

Process: Various agencies provide data to WHO for the calculation of this indicator. UNICEF provides data for three of the 16 indicators: Care-seeking behaviour for children with suspected pneumonia (%), for which it maintains a global database, as well as DPT3 and basic sanitation, estimates that are jointly produced with WHO. Because reporting on this indicator is evolving, it is possible that the process will be modified in the future.

Timing: The current plan is to produce a new round of country, regional and global estimates every two years.

Discrepancies with national estimates: This is a newly developed indicator and the methodology may continue to evolve. As estimates have only been generated at the global level to date, the extent to which global and national level estimates may vary remains to be seen. However, given the range of tracer indicators used to construct the index – many of which are modeled at the global level – discrepancies between global and national level estimates should be anticipated. As monitoring on this indicator evolves, further information will be provided to countries.

Key resources

Indicator information and cross-country comparable estimates:

- UHC: <http://apps.who.int/gho/cabinet/uhc.jsp>
- UNICEF work on MNCH sectors: <https://data.unicef.org/>

Tools and measurement guidance:

- MICS surveys: <http://mics.unicef.org/tools>

Methodological information:

- Monitoring universal health coverage within the Sustainable Development Goals: development and baseline data for an index of essential health services. Lancet 2017: [http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(17\)30472-2/fulltext](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(17)30472-2/fulltext)
- Tracking Universal Health Coverage: 2017 Global Monitoring Report: http://www.who.int/healthinfo/universal_health_coverage/report/2017/en/



INDICATOR 3.B.1

Proportion of the target population covered by all vaccines included in their national programme

Description

Definition and key terms

Although the indicator has been formulated as “Proportion of the target population covered by all vaccines included in their national [immunization] programme”, in most countries it is not possible to measure the proportion of fully immunized children (see key challenges section below) from the current administrative data systems and composite indicators would be difficult to track over time due to lack of comparability across countries and time in national immunization schedules. On the other hand, coverage with a single vaccine will not reflect the complexity of the immunization schedule over the life cycle, nor reflect the progress in the introduction of new vaccines.

Thus, SDG indicator 3.b.1 is currently defined as a series of four immunization coverage indicators:

- **Coverage of diphtheria and tetanus toxoid with pertussis containing vaccine (third dose):** Percentage of surviving infants who received the 3 doses of diphtheria and tetanus toxoid with pertussis (DTP) containing vaccine in a given year.
- **Coverage of measles containing vaccine (second dose):** Percentage of children who received two doses of measles containing vaccine (MCV) according to nationally recommended schedule through routine immunization services.
- **Coverage of pneumococcal conjugate vaccine (last dose in the schedule):** Percentage of surviving infants who received the recommended doses of pneumococcal conjugate vaccine (PCV).
- **Coverage of human papillomavirus vaccine (last dose in the schedule):** Percentage of 15 years old girls who received the recommended doses of human papillomavirus (HPV) vaccine.

For each vaccine, the coverage is defined as follows.

Numerator: Total number of children in the target population who received the given vaccine

Denominator: Number of children in the target population. The target population for DTP and PCV are children under one year of age. MCV2 is often given in the second year of life while some countries recommended before school. HPV’s target population is 15 years old girls.

Key terms:

- Immunization coverage levels are presented as the percentage of a target population that has been vaccinated. Coverage is usually calculated for each vaccine and for the number of doses received. The target population varies depending on national policies, the specific vaccine and the dose for which coverage is being calculated.
- The target population for a given vaccine is defined based on WHO recommended age for administration.
- National immunization schedules are developed by countries based on local disease epidemiology and national health priorities. The schedules are adapted from recommendations from WHO, which provides global vaccine and immunization recommendations for diseases that have an international public health impact in accordance with its mandate to provide guidance to Member States on health policy matters.

National data sources

Estimates of immunization coverage are generally based on two sources of data: reports of vaccinations performed by service providers (administrative data) and household surveys collecting vaccination information from children’s vaccination card or mother recall (survey data).

Administrative data are the preferred source of data on immunization coverage, although data quality varies greatly from country to country. One disadvantage of the current administrative data systems in most countries is the fact that vaccination status is not reported at the individual child level (only aggregates by vaccine-dose are reported). Which makes it impossible to derive a full vaccination coverage (proportion of the population covered with all the vaccines in the national schedule).

The principal sources of immunization survey data are the Expanded Programme on Immunization (EPI) cluster survey, MICS and DHS. Immunization survey data are mainly used for disparities analysis but also as an independent assessment tool for the immunization programme performance.

As described below, UNICEF and WHO use both administrative and survey data to produce annual estimates of immunization coverage for most of the WHO recommended vaccines.

Data collection innovation

Increasingly, more survey programs such as the EPI cluster survey are developing tools and methods to complement household collected data with facility-based data. This facility-based information will also provide a different perspective on the immunization data and will help reduce the impact of recall of vaccination information by caregiver which is a source of data quality issues.



Using the indicator

Interpretation

This indicator aims to measure access to vaccines, including the recently available vaccines, at the national level. National immunization schedules including the recommended vaccines and number of doses vary between countries, with only DTP, polio and measles containing vaccines being used in all countries. In the past, coverage with three doses of DTP or DTP3-containing vaccine was used as a proxy for fully immunized child because to complete the primary series from DTP-containing vaccine requires 3 contacts with the health system. At that time, vaccination schedules had many fewer vaccines and DTP3 was among the last dose received by the children in most countries.

With the increased number of new vaccines in immunization schedules and the extension of immunization beyond first year of life, a more multidimensional measure is needed. The series indicators proposed for tracking Indicator 3.b.1 provide insight into a number of aspects of the functioning of the national immunization programme:

- Coverage of DTP-containing vaccine (third dose): overall system strength to deliver infant vaccinations.
- Coverage of measles-containing vaccine (second dose): ability to deliver vaccines beyond the first year of life through routine immunization services.
- Coverage of pneumococcal conjugate vaccine (last dose): the adaptation of the system to include delivery of new vaccines for children
- Coverage of HPV vaccine among girls (last dose): vaccination over the life cycle

While these indicators provide insight into various aspects of the national immunization programme, for monitoring disease control and impact of vaccines, it is important to measure coverage from each vaccine in national immunization schedule.

Disaggregation

Geography is a key stratifier for understanding how the national immunization programme is functioning in different parts of the country. Since last year, UNICEF and WHO have started systematically collecting administrative coverage data for DTP1, DTP3, and MCV1 at the district level or equivalent (usually 2nd administrative level). The current available district-level administrative data has many quality issues, however its use will help improve its quality and relevance. Notably, the global level estimates produced by WHO and UNICEF (described below) are for the national level and are not disaggregated.

Household surveys also provide subnational estimates of immunization coverage, as well as other key stratifiers including place of residence, household wealth, and characteristics of the mother, such as education.

Common pitfalls

Robust measurement of vaccination coverage is challenging in many countries. When reviewing national data, it is important to keep in mind the following points:

- To derive a valid coverage estimate from administrative data, an accurate denominator is essential. This is a challenge in many countries lacking a fully functioning CRVS system. The accuracy of the denominator becomes even more challenging for some special populations e.g. urban slums, remote community, mobile populations and conflict affected areas.
- While survey data can address the denominator issue and provide a full immunization status for children, they usually cannot produce reliable estimates for smaller geographic regions due to limited sample sizes. And, in some countries, the low vaccination card retention can introduce bias to the survey estimates of immunization coverage.
- Changes in the vaccination schedule and the differences in the national schedules make comparison over time and across countries difficult.
- There are special situations affecting the immunization program which have consequences on the vaccination coverage but can be sometimes difficult to fully measure e.g. shortage of vaccines (stock out), private sector vaccination activities, conflicts and emergencies.



Monitoring and reporting

National

Ministries of Health, national immunization programmes

Global

Agencies: WHO and UNICEF

WHO/UNICEF estimates of national immunization coverage are commonly referred to by their acronym WUENIC.

Process: Annually, UNICEF and WHO jointly collect data on immunization using a standardized data collection form, the WHO/UNICEF Joint Reporting Form on Immunization (JRF), which is sent to countries annually. The JRF questionnaire is reviewed and revised every two years and revisions are often discussed with national immunization program managers during regional immunization program managers meetings. WHO and UNICEF jointly conduct an annual country consultation of WUENIC estimates. The estimates of national immunization coverage are sent to all 195 WHO and UNICEF member states for review, specifically requesting input data validation and any additional contextual information. All input data and additional information are systematically stored in a well-documented database and made available on the web.¹

Timing: WUENIC data collection occurs February-April annually, with country consultations in May-June. New estimates are released every July.

Discrepancies with national estimates: Countries often rely on administrative coverage data, while WHO and UNICEF review and assess data from different sources including administrative systems and surveys. Differences between country produced and international estimates are mainly due to differences between coverage estimates from administrative system and survey results.

Key resources

Indicator information and cross-country comparable estimates:

- UNICEF Data: <https://data.unicef.org/topic/child-health/immunization/>
- WHO immunization: http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index4.html

Tools and measurement guidance:

- MICS: <http://mics.unicef.org/tools>
- DHS: <https://dhsprogram.com/What-We-Do/Survey-Types/DHS.cfm>
- EPI cluster survey: http://who.int/immunization/monitoring_surveillance/routine/coverage/en/index2.html
- Joint reporting form (JRF): http://who.int/immunization/monitoring_surveillance/routine/reporting/en/

Methodological information:

- WHO and UNICEF estimates of national infant immunization coverage: methods and processes. Bull World Health Organ. 2009;87(7):535-41.
- A Formal Representation of the WHO and UNICEF Estimates of National Immunization Coverage: A Computational Logic Approach. PLoS ONE 2012;7(10): e47806. doi:10.1371/journal.pone.0047806
- An Introduction to the Grade of Confidence in the WHO and UNICEF Estimates of National Immunization Coverage
- The Open Public Health Journal, 2013, 6, 73-76

¹ http://who.int/immunization/monitoring_surveillance/data/en/ and <https://data.unicef.org/topic/child-health/immunization/>.