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

Target: 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

Indicator 3.8.1: Coverage of essential health services

Institutional information

Organization(s):

World Health Organization (WHO)

Concepts and definitions

Definition:

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).

The indicator is an index reported on a unitless scale of 0 to 100, which is computed as the geometric mean of 14 tracer indicators of health service coverage.

Concepts:

The index of health service coverage is computed as the geometric means of 14 tracer indicators. The 14 indicators are listed below and detailed metadata for each of the components are given online (http://www.who.int/healthinfo/universal_health_coverage/UHC_Tracer_Indicators_Metadata.pdf) and Annex 1. The tracer indicators are as follows, organized by four broad categories of service coverage:

I. Reproductive, maternal, newborn and child health

1. **Family planning**: Percentage of women of reproductive age (15−49 years) who are married or in-union who have their need for family planning satisfied with modern methods

2. **Pregnancy and delivery care**: Percentage of women aged 15-49 years with a live birth in a given time period who received antenatal care four or more times

3. **Child immunization**: Percentage of infants receiving three doses of diphtheria-tetanus-pertussis containing vaccine

4. **Child treatment**: Percentage of children under 5 years of age with suspected pneumonia (cough and difficult breathing NOT due to a problem in the chest and a blocked nose) in the two weeks preceding the survey taken to an appropriate health facility or provider

II. Infectious diseases

5. **Tuberculosis**: Percentage of incident TB cases that are detected and successfully treated

6. **HIV/AIDS**: Percentage of people living with HIV currently receiving antiretroviral therapy

7. **Malaria**: Percentage of population in malaria-endemic areas who slept under an insecticide-treated net the previous night [only for countries with high malaria burden]

8. **Water and sanitation**: Percentage of households using at least basic sanitation facilities

III. Noncommunicable diseases

9. **Hypertension**: Age-standardized prevalence of non-raised blood pressure (systolic blood pressure <140 mm Hg or diastolic blood pressure <90 mm Hg) among adults aged 18 years and older

10. **Diabetes**: Age-standardized mean fasting plasma glucose (mmol/L) for adults aged 18 years and older

11. **Tobacco**: Age-standardized prevalence of adults >=15 years not smoking tobacco in last 30 days (SDG indicator 3.a.1, metadata available here)

IV. Service capacity and access

12. **Hospital access**: Hospital beds per capita, relative to a maximum threshold of 18 per 10,000 population

13. **Health workforce**: Health professionals (physicians, psychiatrists, and surgeons) per capita, relative to maximum thresholds for each cadre (partial overlap with SDG indicator 3.c.1, see metadata here)

14. **Health security**: International Health Regulations (IHR) core capacity index, which is the average percentage of attributes of 13 core capacities that have been attained (SDG indicator 3.d.1, see metadata here)

Rationale:

Target 3.8 is defined as “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”. The concern is with all people and communities receiving the quality health services they need (including medicines and other health products), without financial hardship. Two indicators have been chosen to monitor target 3.8 within the SDG framework. Indicator 3.8.1 is for health service coverage and indicator 3.8.2 focuses on health expenditures in relation to a household’s budget to identify financial hardship caused by direct health care payments. Taken together, indicators 3.8.1 and 3.8.2 are meant to capture the service coverage and financial protection dimensions, respectively, of target 3.8. These two indicators should be always monitored jointly.

Countries provide many essential services for health protection, promotion, prevention, treatment and care. Indicators of service coverage – defined as people receiving the service they need – are the best way to track progress in providing services under universal health coverage (UHC). Since a single health service indicator does not suffice for monitoring UHC, an index is constructed from 14 tracer indicators selected based on epidemiological and statistical criteria. This includes several indicators that are already included in other SDG targets, thereby minimizing the data collection and reporting burden. The index is reported on a unitless scale of 0 to 100, with 100 being the optimal value.

Comments and limitations:

These tracer indicators are meant to be indicative of service coverage, not a complete or exhaustive list of health services and interventions that are required for universal health coverage. The 14 tracer indicators were selected because they are well-established, with available data widely reported by countries (or expected to become widely available soon). Therefore, the index can be computed with existing data sources and does not require initiating new data collection efforts solely to inform the index.

Methodology

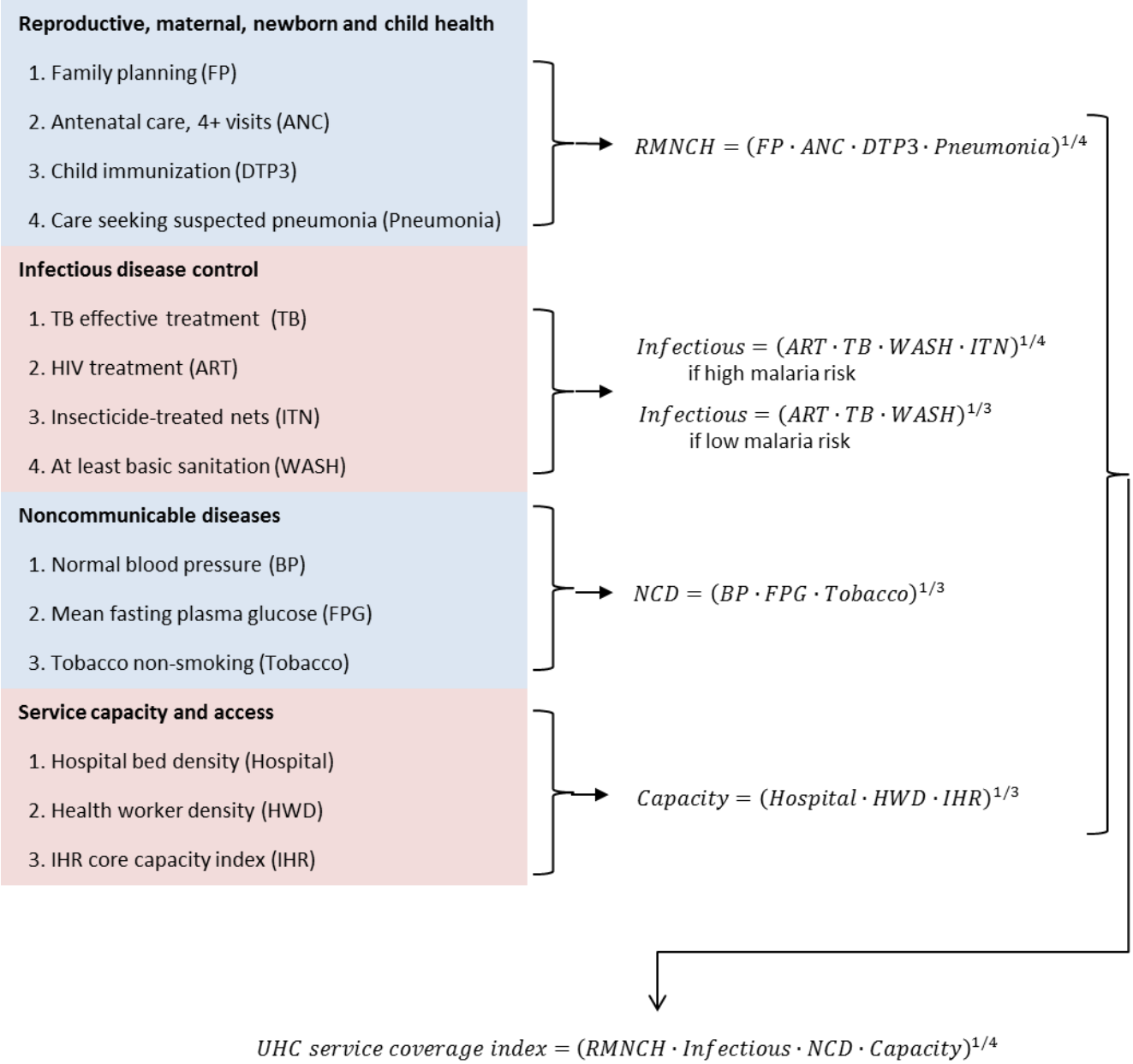
Computation method:

The index is computed with geometric means, based on the methods used for the Human Development Index. The calculation of the 3.8.1 indicator requires first preparing the 14 tracer indicators so that they can be combined into the index, and then computing the index from those values.

The 14 tracer indicators are first all placed on the same scale, with 0 being the lowest value and 100 being the optimal value. For most indicators, this scale is the natural scale of measurement, e.g., the percentage of infants who have been immunized ranges from 0 to 100 percent. However, for a few indicators additional rescaling is required to obtain appropriate values from 0 to 100, as follows:

- Rescaling based on a non-zero minimum to obtain finer resolution (this “stretches” the distribution across countries): prevalence of non-raised blood pressure and prevalence of non-use of tobacco are both rescaled using a minimum value of 50%.
    - rescaled value = (X-50)/(100-50)*100
- Rescaling for a continuous measure: mean fasting plasma glucose, which is a continuous measure (units of mmol/L), is converted to a scale of 0 to 100 using the minimum theoretical biological risk (5.1 mmol/L) and observed maximum across countries (7.1 mmol/L).
    - rescaled value = (7.1 - original value)/(7.1-5.1)*100
- Maximum thresholds for rate indicators: hospital bed density and health workforce density are both capped at maximum thresholds, and values above this threshold are held constant at 100. These thresholds are based on minimum values observed across OECD countries.
    - rescaled hospital beds per 10,000 = minimum(100, original value / 18*100)
    - rescaled physicians per 1,000 = minimum(100, original value / 0.9*100)
    - rescaled psychiatrists per 100,000 = minimum(100, original value / 1*100)
    - rescaled surgeons per 100,000 = minimum(100, original value / 14*100)

Once all tracer indicator values are on a scale of 0 to 100, geometric means are computed within each of the four health service areas, and then a geometric mean is taken of those four values. If the value of a tracer indicator happens to be zero, it is set to 1 (out of 100) before computing the geometric mean. The following diagram illustrates the calculations.



Note that in countries with low malaria burden, the tracer indicator for use of insecticide-treated nets is dropped from the calculation.

Treatment of missing values:

- ***At country level:***

The starting point for computing the index is to assemble existing information for each tracer indicator. In many cases, this involves using country time series that have been produced or collated by UN agencies in consultation with country governments (e.g., immunization coverage, access to sanitation, HIV treatment coverage, etc). Some of these published time series involve mathematical modelling to reconcile multiple data sources or impute missing values, and these details are summarized in Annex 1.

After assembling these inputs, there are still missing values for some country-years for some indicators. Calculating the UHC service coverage index requires values for each tracer indicator for a country, so some imputation is necessary to fill these data gaps. The current approach involves a simple imputation algorithm. For each indicator:

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  - If a country has missing values between two years with values, linear interpolation is used to fill missing values for the intervening years

  - If a country has historical years with values, but no current value, constant extrapolation is used to fill missing values to the current year
  - If a country has no values, a value is imputed. For pneumonia care-seeking and density of surgeons, a regression is fit to impute missing values (see Annex 1 for details). For all other indicators, a regional median is calculated to impute missing values. Regions are based on World Bank geographic regions, with a separate grouping of traditional high-income countries[1]

Given the timing and distribution of various health surveys and other data collection mechanisms, countries do not collect and report on all 14 tracer indicators of health service coverage on an annual basis. In addition, monitoring at country level is most suitably done at broader time intervals, e.g., every 5 years, to allow for new data collection across indicators. Therefore, the extent to which imputation has been used to fill missing information should be communicated along with the index value.

- ***At regional and global levels:***

Any needed imputation is done at country level. These country values can then be used to compute regional and global ones.

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1 Argentina, Australia, Austria, Belgium, Brunei Darussalam, Canada, Chile, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Republic of Korea, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States of America, Uruguay ↑

Regional aggregates:

Regional and global aggregates are computed by using national population sizes to compute a weighted average of country-specific values for the index. This is justified on the grounds that UHC is a property of countries, and the index of essential services is a summary measure of access to essential services for each country's population.

Sources of discrepancies:

The service coverage index draws on existing, publicly available data and estimates for tracer indicators. These numbers have already been through a country consultation process (e.g., for immunization coverage), or are taken directly from country reported data.

Data sources

Description:

Many of the tracer indicators of health service coverage are measured by household surveys. However, administrative data, facility data, facility surveys, and sentinel surveillance systems are utilized for certain indicators. Underlying data sources for each of the 14 tracer indicators are explained in more detail in Annex 1.

In terms of values used to compute the index, values are taken from existing published sources. This includes assembled data sets and estimates from various UN agencies. This is summarized in the above link.

Collection process:

The mechanisms for collecting data from countries vary across the 14 tracer indicators, however in many cases a UN agency or interagency group has assembled and analysed relevant national data sources and then conducted a formal country consultation with country governments to review or produce comparable country estimates. For the UHC service coverage index, once this existing information on the 14 tracer indicators is

collated, WHO conducts a country consultation with nominated focal points from national governments to review inputs and the calculation of the index. WHO does not undertake new estimation activities to produce tracer indicator values for the service coverage index; rather, the index is designed to make use of existing and well-established indicator data series to reduce reporting burden.

Data availability

Description:

Summarizing data availability for the UHC service coverage index is not straightforward, as different data sources are used across the 14 tracer indicators. Additionally, for many indicators comparable estimates have been produced, in many cases drawing on different types of underlying data sources to inform the estimates while also using projections to impute missing values. Based on the underlying data sources for each of the tracer indicators (i.e., ignoring estimates and projections), the average proportion of indicators used to compute the index with underlying data available since 2010 is around 70% across countries globally.

Time series:

A baseline value for the UHC service coverage index for 2015 across 183 countries was published in late 2017. As part of this process, data sources going back to 2000 were assembled. In 2019, it is anticipated to publish a time series from 2000 to 2017.

Disaggregation:

Equity is central to the definition of UHC, and therefore the UHC service coverage index should be used to communicate information about inequalities in service coverage within countries. This can be done by presenting the index separately for the national population vs disadvantaged populations to highlight differences between them.

For countries, geographic location is likely the most feasible dimension for sub-national disaggregation based on average coverage levels measured with existing data sources. To do this, the UHC index can be computed separately by, e.g., province or urban vs rural residence, which would allow for subnational comparisons of service coverage. Currently, the most readily available data for disaggregation on other dimensions of inequality, such as household wealth, is for indicators of coverage within the reproductive, maternal, newborn and child health services category. Inequality observed in this dimension can be used as a proxy to understand differences in service coverage across key inequality dimensions. This approach should be replaced with full disaggregation of all 14 tracer indicators once data are available to do so.

Calendar

Data collection:

Data collection varies from every 1 to 5 years across tracer indicators. For example, country data on immunizations and HIV treatment are reported annually, whereas household surveys to collect information on child treatment may occur every 3-5 years, depending on the country. More details about individual tracer indicators are available in Annex 1.

Data release:

The first release of baseline values for the UHC service coverage index took place in December 2017. It is anticipated that an update will be released in September, 2019.

Data providers

In most cases, Ministries of Health and National Statistical Offices oversee data collection and reporting for health service coverage indicators.

Data compilers

The World Health Organization, drawing on inputs from other international agencies.

References

URL:

http://www.who.int/healthinfo/universal_health_coverage/en/

References:

http://www.who.int/healthinfo/universal_health_coverage/report/2017/en/

http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(17)30472-2.pdf

http://www.who.int/healthinfo/universal_health_coverage/en/

For historical development of methods, see:

http://www.who.int/healthinfo/universal_health_coverage/UHC_WHS2016_TechnicalNote_May2016.pdf?ua=1 (superseded by this document)

http://www.who.int/healthinfo/universal_health_coverage/report/2015/en/

http://www.who.int/healthinfo/universal_health_coverage/report/2014/en/

http://collections.plos.org/uhc2014

Annex 1: Metadata for tracer indicators used to measure the coverage of essential health services for monitoring SDG indicator 3.8.1.

Please send any comments or queries to: uhc_stats@who.int

Tracer area	Family planning
Indicator definition	Percentage of women of reproductive age (15−49 years) who are married or in-union who have their need for family planning satisfied with modern methods.

Numerator	Number of women aged 15-49 who are married or in-union who use modern methods
Denominator	Total number of women aged 15-49 who are married or in-union in need of family planning
Main data sources	Population-based health surveys
Method of measurement	Household surveys include a series of questions to measure modern contraceptive prevalence rate and demand for family planning. Total demand for family planning is defined as the sum of the number of women of reproductive age (15–49 years) who are married or in a union and who are currently using, or whose sexual partner is currently using, at least one contraceptive method, and the unmet need for family planning. Unmet need for family planning is the proportion of women of reproductive age (15–49 years) either married or in a consensual union, who are fecund and sexually active but who are not using any method of contraception (modern or traditional), and report not wanting any more children or wanting to delay the birth of their next child for at least two years. Included are: all pregnant women (married or in a consensual union) whose pregnancies were unwanted or mistimed at the time of conception; all postpartum amenorrhoeic women (married or in consensual union) who are not using family planning and whose last birth was unwanted or mistimed; all fecund women (married or in consensual union) who are neither pregnant nor postpartum amenorrhoeic, and who either do not want any more children (want to limit family size), or who wish to postpone the birth of a child for at least two years or do not know when or if they want another child (want to space births), but are not using any contraceptive method. Modern methods include female and male sterilization, the intra-uterine device (IUD), the implant, injectables, oral contraceptive pills, male and female condoms, vaginal barrier methods (including the diaphragm, cervical cap and spermicidal foam, jelly, cream and sponge), lactational amenorrhea method (LAM), emergency contraception and other modern methods not reported separately.
Method of estimation	The United Nations Population Division produces a systematic and comprehensive series of annual estimates and projections of the percentage of demand for family planning that is satisfied among married or in-union women. A Bayesian hierarchical model combined with country-specific data are used to generate the estimates, projections and uncertainty assessments from survey data. The model accounts for differences by data source, sample population, and contraceptive methods. See here for details: http://www.un.org/en/development/desa/population/theme/family-planning/cp_model.shtml
UHC-related notes	

Tracer area	Pregnancy and delivery care
Indicator definition	Percentage of women aged 15-49 years with a live birth in a given time period who received antenatal care four or more times
Numerator	Number of women aged 15−49 years with a live birth in a given time period who received antenatal care four or more times
Denominator	Total number of women aged 15−49 years with a live birth in the same period.
Main data sources	Household surveys and routine facility information systems.
Method of measurement	Data on four or more antenatal care visits is based on questions that ask if and how many times the health of the woman was checked during pregnancy. Household surveys that can generate this indicator include DHS, MICS, RHS and other surveys based on similar methodologies. Service/facility reporting systems can be used where the coverage is high, usually in higher income countries.
Method of estimation	WHO maintains a data base on coverage of antenatal care: http://apps.who.int/gho/data/node.main.ANTENATALCARECOVERAGE4
UHC-related notes	Ideally this indicator would be replaced with a more comprehensive measure of pregnancy and delivery care, for example the proportion of women who have a skilled provider attend the birth or an institutional delivery. A challenge in measuring skilled attendance at birth is determining which providers are “skilled”.

Tracer area	Child immunization
Indicator definition	Percentage of infants receiving three doses of diphtheria-tetanus-pertussis containing vaccine
Numerator	Children 1 year of age who have received three doses of diphtheria-tetanus-pertussis containing vaccine
Denominator	All children 1 year of age

Main data sources	Household surveys and facility information systems.
Method of measurement	For survey data, the vaccination status of children aged 12–23 months is collected from child health cards or, if there is no card, from recall by the care-taker. For administrative data, the total number of doses administered to the target population is extracted.
Method of estimation	Together, WHO and UNICEF derive estimates of DTP3 coverage based on data officially reported to WHO and UNICEF by Member States, as well as data reported in the published and grey literature. They also consult with local experts - primarily national EPI managers and WHO regional office staff - for additional information regarding the performance of specific local immunization services. Based on the available data, consideration of potential biases, and contributions from local experts, WHO/UNICEF determine the most likely true level of immunization coverage. For details, see here: http://www.who.int/bulletin/volumes/87/7/08-053819/en/ http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index4.html
UHC-related notes	There is variability in national vaccine schedules across countries. Given this, one option for monitoring full child immunization is to monitor the fraction of children receiving vaccines included in their country's national schedule. A second option, which may be more comparable across countries and time, is to monitor DTP3 coverage as a proxy for full child immunization. Diphtheria-tetanus-pertussis containing vaccine often includes other vaccines, e.g., against Hepatitis B and Haemophilus influenza type B, and is a reasonable measure of the extent to which there is a robust vaccine delivery platform within a country.

Tracer area	Child treatment (care-seeking for symptoms of pneumonia)
Indicator definition	Percentage of children under 5 years of age with suspected pneumonia (cough and difficult breathing NOT due to a problem in the chest and a blocked nose) in the two weeks preceding the survey taken to an appropriate health facility or provider.
Numerator	Number of children with suspected pneumonia in the two weeks preceding the survey taken to an appropriate health provider.
Denominator	Number of children with suspected pneumonia in the two weeks preceding the survey.
Main data sources	Household surveys

Method of measurement	During the UNICEF/WHO Meeting on Child Survival Survey-based Indicators, held in New York, 17–18 June 2004, it was recommended that acute respiratory infections (ARI) be described as “presumed pneumonia” to better reflect probable cause and the recommended interventions. The definition of presumed pneumonia used in the Demographic and Health Surveys (DHS) and in the Multiple Indicator Cluster Surveys (MICS) was chosen by the group and is based on mothers’ perceptions of a child who has a cough, is breathing faster than usual with short, quick breaths or is having difficulty breathing, excluding children that had only a blocked nose. The definition of “appropriate” care provider varies between countries. WHO maintains a data base of country-level observations from household surveys that can be accessed here: http://apps.who.int/gho/data/node.main.38?lang=en
Method of estimation	There are currently no internationally comparable estimates for this indicator.
UHC-related notes	This indicator is not typically measured in higher income countries with well-established health systems. For countries without observed data, coverage was estimated from a regression that predicts coverage of care-seeking for symptoms of pneumonia (on the logit scale), obtained from the WHO data base described above, as a function of the log of the estimated under-five pneumonia mortality rate, which can be found here: https://www.who.int/healthinfo/global_burden_disease/estimates/en/index2.html
Tracer area	Tuberculosis treatment
Indicator definition	Percentage of incidence TB cases that are detected and successfully treated in a given year
Numerator	Number of new and relapse cases detected in a given year and successfully treated
Denominator	Number of new and relapse cases in the same year
Main data sources	Facility information systems, surveillance systems, population-based health surveys with TB diagnostic testing, TB register and related quarterly reporting system (or electronic TB registers)
Method of measurement	This indicator requires three main inputs: (1) The number of new and relapse TB cases diagnosed and treated in national TB control programmes and notified to WHO in a given year. (2) The number of incident TB cases for the same year, typically estimated by WHO.

	(3) Percentage of TB cases successfully treated (cured plus treatment completed) among TB cases notified to the national health authorities. The final indicator = (1)/(2) x (3)
Method of estimation	Estimates of TB incidence are produced through a consultative and analytical process led by WHO and are published annually. These estimates are based on annual case notifications, assessments of the quality and coverage of TB notification data, national surveys of the prevalence of TB disease and information from death (vital) registration systems. Estimates of incidence for each country are derived, using one or more of the following approaches depending on available data: 1. incidence = case notifications/estimated proportion of cases detected; 2. incidence = prevalence/duration of condition; 3. incidence = deaths/proportion of incident cases that die. These estimates of TB incidence are combined with country-reported data on the number of cases detected and treated, and the percentage of cases successfully treated, as described above.
UHC-related notes	To compute the indicator using WHO estimates, one can access necessary files here: http://www.who.int/tb/country/data/download/en/, and compute the indicator as = c_cdr x c_new_tsr
Tracer area	HIV treatment
Indicator definition	Percentage of people living with HIV currently receiving antiretroviral therapy (ART)
Numerator	Number of adults and children who are currently receiving ART at the end of the reporting period
Denominator	Number of adults and children living with HIV during the same period
Main data sources	Facility reporting systems, sentinel surveillance sites, population-based surveys
Method of measurement	Numerator: The numerator can be generated by counting the number of adults and children who received antiretroviral combination therapy at the end of the reporting period. Data can be collected from facility-based ART registers or drug supply management systems. These are then tallied and transferred to cross sectional monthly or quarterly reports which can then be aggregated for national totals. Patients receiving ART in the private sector and public sector should be included in the numerator.

	Denominator: Data on the number of people with HIV infection may come from population-based surveys or, as is common in sub-Saharan Africa, surveillance systems based on antenatal care clinics.
Method of estimation	Estimates of antiretroviral treatment coverage among people living with HIV for 2000-2018 are derived as part of the 2019 UNAIDS' estimation round. To estimate the number of people living with HIV across time in high burden countries, UNAIDS in collaboration with countries uses an epidemic model (Spectrum) that combines surveillance data on prevalence with the current number of patients receiving ART and assumptions about the natural history of HIV disease progression. Since ART is now recommended for all individuals living with HIV, monitoring ART coverage is less complicated than before, when only those with a certain level of disease severity were eligible to receive ART. Estimates of ART coverage can be found here: http://aidsinfo.unaids.org/
UHC-related notes	Comparable estimates of ART coverage in high income countries, in particular time trends, are not always available.
Tracer area	Malaria prevention
Indicator definition	Percentage of population in malaria-endemic areas who slept under an ITN the previous night.
Numerator	Number of people in malaria-endemic areas who slept under an ITN.
Denominator	Total number of people in malaria endemic areas.
Main data sources	Data on household access and use of ITNs come from nationally representative household surveys such as Demographic and Health Surveys, Multiple Indicator Cluster Surveys, and Malaria Indicator Surveys. Data on the number of ITNs delivered by manufacturers to countries are compiled by Milliner Global Associates, and data on the number of ITNs distributed within countries are reported by National Malaria Control Programs.
Method of measurement	Many recent national surveys report the number of ITNs observed in each respondent household. Ownership rates can be converted to the proportion of people sleeping under an ITN using a linear relationship between access and use that has been derived from 62 surveys that collect information on both indicators.
Method of estimation	Mathematical models can be used to combine data from household surveys on access and use with information on ITN deliveries from manufacturers and ITN distribution by

	national malaria programmes to produce annual estimates of ITN coverage. WHO uses this approach in collaboration with the Malaria Atlas Project. Methodological details can be found in the Annex of the World Malaria Report 2015: http://www.who.int/malaria/publications/world-malaria-report-2015/report/en/.
UHC-related notes	WHO produces comparable ITN coverage estimates for 40 high burden countries. For other countries, ITN coverage is not included in the UHC service coverage index due to data limitations.
Tracer area	Water and sanitation
Indicator definition	Percentage of households using at least basic sanitation facilities
Numerator	Population living in a household with: flush or pour-flush to piped sewer system, septic tank or pit latrine; ventilated improved pit latrine; pit latrine with slab; or composting toilet.
Denominator	Total population
Main data sources	Population-based household surveys and censuses
Method of measurement	Household-level responses, weighted by household size, are used to compute population coverage.
Method of estimation	The WHO/UNICEF Joint Monitoring Programme has produced regular estimates of coverage of at least basic sanitation for MDG monitoring. After compiling a database of available data sources, for each country, simple linear regressions are fitted to the country's data series to obtain an in-sample estimate, as well as to produce a 2-year extrapolation beyond the last available data point, after which coverage is held constant for 4 years and then assumed missing. This is done separately for urban and rural regions, and then combined to obtain national coverage estimates. Details of the methodology and most recent estimates can be found here: http://www.wssinfo.org/
UHC-related notes	The SDG indicator for sanitation (SDG 6.2.1) is an expanded version of the MDG indicator, incorporating the quality of sanitation facilities. It is not for UHC monitoring due to lower data availability. A joint indicator that identifies the proportion of households with access to both safe water and sanitation could also be considered.
Tracer area	Prevention of cardiovascular disease

Indicator definition	Age-standardized prevalence of normal blood pressure among adults aged 18+, regardless of treatment status
Numerator	Number of adults aged 18 or older with systolic blood pressure <140 mm Hg and diastolic blood pressure <90 mm Hg (regardless of treatment status)
Denominator	Number of adults aged 18 or older
Main data sources	Population-based surveys and surveillance systems
Method of measurement	Data sources recording measured blood pressure are used (self-reported data are excluded). If multiple blood pressure readings are taken per participant, the first reading is dropped and the remaining readings are averaged.
Method of estimation	For producing comparable national estimates, data observations of prevalence defined in terms of alternate SBP and/or DBP cutoffs are converted into prevalence of raised blood pressure, defined as systolic blood pressure >=140 mm Hg or diastolic blood pressure >=90 mm Hg using regression equations. A Bayesian hierarchical model is then fitted to these data to calculate age-sex-year-country specific prevalences, which accounts for national vs. subnational data sources, urban vs. rural data sources, and allows for variation in prevalence across age and sex. Age-standardized estimates are then produced by applying the crude estimates to the WHO Standard Population. Details on the statistical methods are here: http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)31919-5/fulltext WHO and the NCD Risk Factor Collaboration (NCD-RisC) has produced comparable estimates for this indicator up through year 2015, which are available here: http://apps.who.int/gho/data/node.main.A875STANDARD?lang=en
UHC-related notes	Prevalence estimates are converted to the prevalence of normal blood pressure for incorporation into the UHC index, so that a value of 100% is the optimal target. This is computed as: normal blood pressure prevalence = 1 – raised blood pressure prevalence. The above estimates are done separately for men and women; for the UHC tracer indicator a simple average of values for men and women is computed. Normal blood pressure is the sum of the percentage of individuals who do not have hypertension, and the percentage of individuals whose hypertension is controlled by medication. The absence of hypertension is a result of prevention efforts via promotion of physical activity and healthy diets, as well as other factors. Hypertension controlled with medication is a result of effective treatment. This indicator is thus a proxy for both effective health promotion and effective medical services.
Tracer area	Management of diabetes

Indicator definition	Age-standardized mean fasting plasma glucose for adults aged 18 years and older
Main data sources	Population-based surveys and surveillance systems
Method of measurement	Fasting plasma glucose (FPG) levels are determined by taking a blood sample from participants who have fasted for at least 8 hours. Other related biomarkers, such as hemoglobin A1c (HbA1c), were used to help calculate estimates (see below).
Method of estimation	For producing comparable national estimates, data observations based on mean FPG, oral glucose tolerance test (OGTT), HbA1c, or combinations therein, are all converted to mean FPG. A Bayesian hierarchical model is then fitted to these data to calculate age-sex-year-country specific prevalences, which accounts for national vs. subnational data sources, urban vs. rural data sources, and allows for variation in prevalence across age and sex. Age-standardized estimates are then produced by applying the crude estimates to the WHO Standard Population. Methodological details can be found here: https://www.who.int/diabetes/global-report/en/
UHC-related notes	An individual's FPG may be low because of effective treatment with glucose-lowering medication, or because the individual is not diabetic as a result of health promotion activities or other factors such as genetics. Mean FPG is thus a proxy for both effective promotion of healthy diets and behaviors and effective treatment of diabetes. The above estimates are done separately for men and women; for the UHC tracer indicator a simple average of values for men and women is computed.
Tracer area	Tobacco control
Indicator definition	Age-standardized prevalence of adults >=15 years not smoking tobacco in last 30 days
Numerator	Adults 15 years and older who have not smoked tobacco in the last 30 days
Denominator	Adults 15 years and older
Main data sources	Household surveys

Method of measurement	“Current tobacco smoking" includes cigarettes, cigars, pipes or any other smoked tobacco products used in the past 30 days. Data are collected via self-report in surveys.
Method of estimation	WHO estimates prevalence of current tobacco (non) smoking with a negative binomial meta-regression model, which generates comparable estimates by adjusting for differences in age groups and indicator definition across national surveys included in the analysis. These estimates are done separately for men and women. Methodological details can be found here: http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)60264-1/supplemental
UHC-related notes	Prevalence of not smoking tobacco is computed as 1 minus the prevalence of tobacco smoking.
Tracer area	Hospital access
Indicator definition	Hospital beds per capita, relative to a maximum threshold of 18 per 10,000 population
Numerator	Number of hospital beds (should exclude labor and delivery beds)
Denominator	Total population
Main data sources	Administrative systems / Health facility reporting system
Method of measurement	Country administrative systems are used to total the number of hospital beds, which are divided by the total estimated population, and multiplied by 10,000. WHO regional offices and other groups collect information on national hospital bed density, including the following online resources: https://rho.emro.who.int/rhodata/node.main.A36 WHO AFRO regional observatory: http://www.aho.afro.who.int/en/data-statistics/hospital-beds-10-000-population WHO EURO European Health for All Database: https://gateway.euro.who.int/en/datasets european-health-for-all-database/ OECD: https://data.oecd.org/healtheqt/hospital-beds.htm
Method of estimation	Using available data, the indicator is computed relative to a threshold value of 18 hospital beds per 10,000 population. This threshold is below the observed OECD high income

	country minimum (since year 2000) of 20 per 10,000 and tends to correspond to an inpatient hospital admission rate of around 5 per 100 per year. This indicator is designed to capture low levels of hospital capacity; the maximum threshold is used because very high hospital bed densities are not necessary an efficient use of resources. The indicator is computed as follows, using country data on hospital bed density (x), which results in values ranging from 0 to 100: Country with a hospital bed density $x < 18$ per 10,000 per year, the indicator = x /18*100. Country with a hospital bed density $x >= 18$ per 10,000 per year, the indicator = 100.
UHC-related notes	An alternative indicator could be hospital in-patient admission rate, relative to a maximum threshold. However, that indicator is currently not reported widely across regions, in particular the African Region. In countries where both hospital beds per capita and in-patient admission rates are available, they are highly correlated.
Tracer area	Health workforce
Indicator definition	Health professionals (physicians, psychiatrists, and surgeons) per capita, relative to maximum thresholds for each cadre
Numerator	Number of physicians, psychiatrists and surgeons
Denominator	Total population
Main data sources	National database or registry of health workers, ideally coupled with regular assessment of completeness using census data, professional association registers, or facility censuses.
Method of measurement	The classification of health workers is based on criteria for vocational education and training, regulation of health professions, and activities and tasks of jobs, i.e., a framework for categorizing key workforce variables according to shared characteristics. The WHO framework largely draws on the latest revisions to the internationally standardized classification systems of the International Labour Organization (International Standard Classification of Occupations), United Nations Educational, Scientific and Cultural Organization (International Standard Classification of Education), and the United Nations Statistics Division (International Standard Industrial Classification of All Economic Activities). Methodological details and data can be found here: http://www.who.int/hrh/statistics/hwfstats/en/ Data are from the following sources: Physicians: http://apps.who.int/gho/data/node.main.HWFGRP_0020?lang=en Psychiatrists: https://www.who.int/healthinfo/universal_health_coverage/report/2017/en/

	Surgeons: http://apps.who.int/gho/data/node.main.HWF9?lang=en (data here were supplemented by prior editions of the the database)
Method of estimation	Using available data, the indicator is computed by first rescaling, separately, health worker density ratios for each of the three cadres (physicians, psychiatrists and surgeons) relative to the minimum observed values across OECD countries since 2000, which are as follows: physicians = 0.9 per 1000, psychiatrists = 1 per 100,000, and surgeons = 14 per 100,000. This rescaling is done in the same way as that for the hospital bed density indicator described above, resulting in indicator values that range from 0 to 100 for each of the three cadres. For example, using country data on physicians per 1000 population (x), the cadre-specific indicator would be computed as: Country with $x < 0.9$ per 1000 per year, the cadre-specific indicator = x /0.9*100. Country with $x >= 0.9$ per 1000 per year, the cadre-specific indicator = 100. As a final step, the geometric mean of the three cadre-specific indicator values is computed to obtain the final indicator of health workforce density.
UHC-related notes	The “physicians” category would ideally be expanded to include all “core health professionals”, such as nurses and midwives. However, no internationally comparable data base exists that uses consistent definitions of non-physician core health professionals to allow for fully accurate cross-country comparisons. For countries without observed data, the density of surgeons was estimated from a regression that predicts the log of surgeons per 100,000, obtained from the WHO data base described above, as a function of the log of GDP per capita, as estimated by the World Bank.
Tracer area	Health security
Indicator definition	International Health Regulations (IHR) core capacity index, which is the average percentage of attributes of 13 core capacities that have been attained at a specific point in time. The 13 core capacities are: (1) National legislation, policy and financing; (2) Coordination and National Focal Point communications; (3) Surveillance; (4) Response; (5) Preparedness; (6) Risk communication; (7) Human resources; (8) Laboratory; (9) Points of entry; (10) Zoonotic events; (11) Food safety; (12) Chemical events; (13) Radionuclear emergencies.
Numerator	Number of attributes attained
Denominator	Total number of attributes
Main data	Key informant survey

sources	
Method of measurement	Key informants report on attainment of a set of attributes for each of 13 core capacities using a standard WHO instrument, as described here: http://apps.who.int/iris/bitstream/10665/84933/1/WHO_HSE_GCR_2013.2_eng.pdf Capacity-level indicator values can be found here: http://apps.who.int/gho/data/node.main.IHRSPARALL?lang=en
Method of estimation	The indicator is computed by averaging, across the 13 core capacities, the percentage of attributes for each capacity that have been attained.
UHC-related notes	Countries began reporting IHR core capacity attainment to WHO for the year 2010. The earliest available IHR score for each country is used for all years 2000-2009.

Related indicators as of February 2020

The UHC service coverage index is designed to summarize existing indicators of health service coverage to ensure consistency with the SDGs and other global initiatives and reduce duplication and reporting burden. Currently, two other SDG indicators are included in the index (3.a.1 and 3.d.1).

Indicator 3.8.1 should always be interpreted together with the other SDG UHC indicator, 3.8.2, which measures financial protection.