



WHO/SEARO/Gary Hampton

# SIX LINES OF ACTION TO PROMOTE HEALTH IN THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

## Overview

The 2030 Agenda for Sustainable Development (1) is the world's first comprehensive blueprint for sustainable development. Launched at the end of 2015, this Agenda frames health and well-being as both outcomes and foundations of social inclusion, poverty reduction and environmental protection. From a health perspective, development can be said to be “sustainable” when resources – natural and manufactured – are managed by and for all individuals in ways which support the health and well-being of present and future generations (2).<sup>1</sup>

In addition to acting as a stimulus for action, the 2030 Agenda provides an opportunity to build better systems for health – by strengthening health systems per se to achieve universal health coverage (UHC), and by recognizing that health depends upon, and in turn supports, productivity in other key sectors such as agriculture, education, employment, energy, the environment and the economy.

To help build better systems for health and to achieve the Sustainable Development Goals (SDGs) WHO is promoting

the six main lines of action shown in Table 1.1. Recognizing that the SDGs embrace all aspects of health, these actions are intended to encourage not only the realigning of present efforts in relation to the 2030 Agenda, but also the investigating of new ways of accelerating gains already made in improving health and well-being. For each of the six lines of action expanded upon in more detail in subsequent sections of this report (see sections 1.1–1.6) there are a number of opportunities and challenges.

First, the monitoring and evaluation of progress made towards defined targets was a major strength of the Millennium Development Goals (MDGs) – both in terms of measuring progress and fostering accountability. In the SDG framework, health both contributes to and benefits from all the other goals. As a result, the measurement of progress must traverse the whole framework. In addition to the 13 specific health targets of SDG 3, a wide range of health-related targets are incorporated into the other goals. Examples include SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture); SDG 6 (Ensure availability and sustainable management of water and sanitation for all); SDG 7 (Ensure access to affordable, reliable, sustainable and modern energy for all); SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all); SDG 11 (Make

<sup>1</sup> This definition, oriented towards health, builds upon the general definition of sustainable development given in: *Our common future. Report of the United Nations World Commission on Environment and Development*. Geneva: United Nations World Commission on Environment and Development ([www.un-documents.net/our-common-future.pdf](http://www.un-documents.net/our-common-future.pdf), accessed 13 March 2017).

cities and human settlements inclusive, safe, resilient and sustainable); SDG 12 (Ensure sustainable consumption and production patterns); SDG 13 (Take urgent action to combat climate change and its impacts); and SDG 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels).

Health research, and monitoring and evaluation activities have been boosted in recent years by rapid technological advances that allow for the collection and management of increasingly large volumes of primary data – disaggregated to reveal the individuals and populations most in need. The advent of “big data” is a motivation to build links between databases in different sectors, to provide greater access to data and to develop new analytical methods that will lead to a better understanding of disease and open up pathways to new interventions.

Efforts to compile health statistics – including for the WHO World Health Statistics series – have prompted reflection on how best to measure health as both an outcome and determinant of sustainable development. In order to monitor progress towards the overall SDG 3 goal (Ensure healthy lives and promote well-being for all at all ages), WHO has considered several overarching indicators. These include “life expectancy”; “healthy life expectancy”; and “number of deaths before age 70” (3). Such indicators are affected not only by the progress made towards the SDG 3 targets but also towards the health-related targets in other goals. They therefore reflect the multisectoral determinants of health. Current estimates of life expectancy and healthy life expectancy are included in this report as summary indicators of health throughout the life-course (see Annexes A and B). The development and monitoring of comparable indicators of health-state distributions, disability and well-being in populations will require further research, along with the implementation of standardized survey instruments and methodologies.

During the period 2000–2015, the MDGs focused on programmes tailored to specific health conditions – mainly in relation to maternal and child health, and communicable diseases (notably HIV/AIDS, malaria and tuberculosis). Far less attention was given to the performance of whole health systems, including health services, with the result that the potential benefits of doing so were neglected. The SDGs remedy this situation by emphasizing the crucial need for UHC, including full access to and coverage of health services, with financial risk protection, delivered via equitable and resilient health systems. UHC is not an alternative to the disease-control programmes of the MDG era – rather it embraces these programmes so that increased population coverage can be sustained within a comprehensive package of health services. The SDGs also encompass the provision of services for noncommunicable

diseases (NCDs), mental health and injuries, while fostering practical ways of implementing health interventions through already established international and other mechanisms. Such mechanisms include the WHO Framework Convention on Tobacco Control (4) which is now considered to be an instrument capable of promoting not only health but development more broadly.

The persistence of profound social and economic inequities not only compromises the freedoms and entitlements of individuals but directly contravenes the principle, clearly set out in the WHO Constitution, that the right to the highest attainable standard of health is a fundamental right of every human being. As well as being an objective in its own right, health equity is a key enabling factor, for example in working towards UHC. In seeking health equity, there are mutual synergies to be harnessed between activities aimed at achieving the SDG 3 targets and those that promote gender equality (SDG 5), equality within countries more generally (SDG 10) and transparency, accountability and non-discriminatory laws (SDG 16). However, to make the movement towards equity a real force for change, specific programmes of work are needed to identify objectively who is being left behind, and to develop and implement effective solutions.

Sustainable financing underpins any system that aims to improve health. One unintended consequence of the focus on disease-control programmes during the MDG era was the creation of parallel financial flows and the duplication of health system functions, such as those for information gathering and procurement. It is intended that inclusion of the concept of UHC within SDG 3 will lead to a more comprehensive approach to health financing.

New priorities for health financing have now been set out in the Addis Ababa Action Agenda (5). One point of agreement is that each country has the primary responsibility for its own economic and social development. In that context, the guiding principles of health financing include, for example, enhancing domestic tax administration and reducing tax avoidance to increase the overall capacity for public spending, including on health. In addition to the principles outlined in the Addis Ababa Action Agenda, good practice also involves reducing the fragmentation of financial flows and pooling health revenues so as to maximize redistributive capacity and better match funds to priority health services and populations.

Research and innovation are further prerequisites for achieving the SDGs. Here, innovation refers not only to the invention and development of new technologies but also to finding novel means of implementation that would include legal and financial instruments, health workforce expansion outside the medical profession, and the use of common platforms for health delivery. Without continuous

**Table 1.1**  
**New opportunities provided by the 2030 Agenda with reference to six main lines of action**

	Six main lines of action	Opportunities provided by the 2030 Agenda
Building better systems for health	Intersectoral action by multiple stakeholders (see section 1.6)	Placing health in all sectors of policy-making; combining the strengths of multiple stakeholders
	Health systems strengthening for UHC (see section 1.2)	Disease-control programmes embedded in a comprehensive health system that provides complete coverage through fully staffed and well-managed health services, with financial risk protection
Enabling factors	Respect for equity and human rights (see section 1.3)	Improving health for whole populations by including all individuals (“leave no one behind”) and empowering women
	Sustainable financing (see section 1.4)	Attracting new sources of funding; emphasizing domestic financing, with alignment of financial flows to avoid duplication of health system functions
	Scientific research and innovation (see section 1.5)	Reinforcing research and innovation as foundations for sustainable development, including a balance of research on medical, social and environmental determinants and solutions
	Monitoring and evaluation (see section 1.1)	Exploiting new technologies to manage large volumes of data, disaggregated to ascertain the needs of all individuals; tracking progress towards SDG 3 and all other health-related targets

investment in research and innovation in new technologies and health service implementation many of the ambitious SDG targets simply will not be achieved.

It is clear that responsibility and accountability for health in the context of sustainable development extend well beyond the health sector. The 2030 Agenda now provides a real opportunity to place health in all domains of policy-making, to break down barriers and build new partnerships, and to bring coherence to policies and actions. Among the many examples of key synergies that characterize the SDGs, health stands on common ground with social inclusion and poverty alleviation, and efforts to move towards UHC contribute directly to public security. In addition, ending hunger and achieving food security and improved food safety and nutrition are vital for health and development, while the provision of clean water and sanitation could substantially reduce the hundreds of thousands of deaths each year caused by diarrhoeal diseases.

The six lines of action shown in Table 1.1 and individually discussed in more detail in sections 1.1–1.6 below are not intended to be comprehensive and exclusive. Rather, their purpose is to highlight the core values that underpin sustainable development, and to identify some of the crucial factors that will need to be addressed in building better systems for health and well-being, and in achieving the ambitious goals and targets set by the international community.

## 1.1 Monitoring the health-related SDGs

One key element in fostering accountability around the MDGs was the increased emphasis placed on monitoring progress. In the SDG era this focus on monitoring progress continues, with countries proposing a country-led follow-up and review framework (6). One of the framework’s guiding principles is that the monitoring process will be voluntary and country-led, and that national official data sources

will provide the foundation for both regional and global-level reviews. Countries have affirmed their resolve to implement robust monitoring strategies in order to ensure accountability to their citizens. For many countries, this would imply new and improved data-collection efforts. Disaggregation by all relevant inequality dimensions is another key guiding principle that will have important implications for data gathering (see section 1.3).

The SDGs also represent new directions in terms of the health and health-related indicators chosen. In addition to the 13 explicit health targets of SDG 3 there are numerous health-related targets in the other 16 goals (Table 1.2). In addition, in contrast to the MDG focus on maternal and child health and priority infectious diseases, the SDGs are broader and more comprehensive, and include indicators for NCDs, mental health and injuries. The use of mortality indicators to monitor the health of populations has also increased. Around one third of the selected health-related indicators shown in Table 1.2 require information on total or cause-specific mortality. Countries will face new challenges in building or improving systems for monitoring mortality by cause.

### Data for monitoring the health-related SDGs

Currently, very few of the 42 selected health-related SDG indicators listed in Table 1.2 are adequately measured in most countries – with the result that high-quality data are not routinely collected with sufficient detail to allow for regular computation of national levels and trends, or for disaggregation across key dimensions of inequality. In addition, whereas many countries have established monitoring systems for some indicators that can be strengthened, other indicators are new and hard to measure, and further investment and development will be required before sufficient country-level data are available. Countries will need strong health information systems that use multiple data sources to generate the statistics needed for decision-making and for tracking progress towards the SDG targets.

**Table 1.2**  
SDG 3 indicators and other selected health-related indicators<sup>a</sup> by data source

Indicator	Indicator area	CRVS <sup>b</sup>	Survey <sup>c</sup>	Facility records <sup>d</sup>	Other common data sources	Key definitional or methodological challenges
3.1.1	Maternal mortality	●	●		Specialized study; (census)	Reporting of pregnancy-related deaths in surveys; under-reporting of maternal deaths in CRVS systems
3.1.2	Skilled birth attendance		●	●		Need for consistent definition of skilled cadres across countries and data sources
3.2.1	Under-five mortality rate	●	●		(Census)	Under-reporting of neonatal deaths; age misstatement
3.2.2	Neonatal mortality rate	●	●			Under-reporting; age misstatement; misclassification with stillbirths
3.3.1	HIV incidence	●	●	●		Models needed to infer incidence from observed prevalence and antiretroviral therapy (ART) coverage data
3.3.2	Tuberculosis incidence	●	●	●	Case notifications	Determining rate of under-reporting of cases from facility data and/or routine surveillance systems
3.3.3	Malaria incidence		●	●	Case notifications	Incompleteness of case notifications in high-burden areas; prediction of incidence from parasite-prevalence surveys
3.3.4	Hepatitis B incidence		●			Need to survey large number of five-year-olds once vaccination is at scale
3.3.5	Need for neglected tropical disease treatment/care		●	●	Case notifications	Under-reporting of cases; aggregation across diseases
3.4.1	Mortality due to NCD	●	●			Quality of cause-of-death assignment
3.4.2	Suicide mortality rate	●	●		Police/coronial data	Determination of intent; under-reporting due to stigma, economic or legal concerns
3.5.1	Treatment for substance use disorders			●		Lack of agreed indicator definition
3.5.2	Alcohol use				Industry/government sales records	Estimating tourist consumption and home production
3.6.1	Deaths from road traffic injuries	●	●		Police/coronial data	Definitional differences across death registration data, surveillance systems and police data
3.7.1	Family planning		●	●		Unmarried women are typically excluded
3.7.2	Adolescent birth rate	●	●		(Census)	Age misstatement
3.8.1	UHC coverage index		●	●		Asynchronous data collection across tracer indicators; lack of disaggregation variables for some tracer indicators
3.8.2	Financial protection		●			Lack of standard survey instrument
3.9.1	Mortality due to air pollution	●	●		Air-quality monitors/satellite data	Uncertainty around assumptions used to attribute deaths to poor air quality
3.9.2	Mortality due to unsafe WASH services	●	●		Hand-washing observation studies	Uncertainty around assumptions used to attribute deaths to unsafe WASH
3.9.3	Mortality due to unintentional poisoning	●	●			Deaths from alcohol and illicit drug use are often assigned to unintentional poisoning with an unspecified substance
3.a.1	Tobacco use		●			Inconsistent indicator definition measured across surveys
3.b.1	Vaccine coverage		●	●		Reconciliation of household survey and administrative data sources
3.b.2	Development aid for health research				Official government report	Incomplete reporting
3.b.3	Essential medicines				Health-facility survey	Establishing sampling frame of public and private facilities; confirming quality of medicines in stock
3.c.1	Health workers		●	●	Census	Inconsistent definitions across sources
3.d.1	IHR capacity and emergency preparedness				Country self-assessment and/or key informant survey	Consistency and accuracy of reported assessments

Table 1.2, continued

Indicator	Indicator area	CRVS <sup>b</sup>	Survey <sup>c</sup>	Facility records <sup>d</sup>	Other common data sources	Key definitional or methodological challenges
1.a.2	Proportion of government spending on essential services, including health				Government budget data	Difficulty accessing expenditures that are not centrally available or are off-budget
2.2.1	Stunting among children		●	●		Proper measurement requires trained anthropometrist; age misreporting
2.2.2	Wasting and overweight among children		●	●		Accuracy and precision of the scale used to weigh the child; age misreporting
5.2.1	Intimate partner violence against women		●			Definitional issues and comparability of self-reporting across countries
5.3.2	Female genital mutilation		●			Reliability and validity of self-reporting is not known
6.1.1	Safely managed drinking-water services		●		Supplementary data on quality of water services	Obtaining data on water availability and quality in households
6.2.1	Safely managed sanitation services		●		Supplementary data on excreta management	Obtaining data on excreta management
7.1.2	Clean household energy		●			Survey modules must be revised to monitor clean energy
8.8.1	Occupational injury mortality	●			Occupational surveillance systems	Definitions vary across countries
11.6.2	Air pollution				Air-quality monitors; satellite data	Placement of air-quality monitors; calibration of satellite data to match ground measurements
13.1.2 <sup>e</sup>	Mortality due to disasters	●	●		Estimates by governments, aid agencies, NGOs, academics and the media	Defining end of disaster event and attributing deaths to the disaster
16.1.1	Homicide	●	●		Police/coronial records	Under-reporting and misreporting in death registration data; under-reporting and inconsistent definitions in criminal justice data sources
16.1.2	Mortality due to conflicts	●	●	●	Estimates by governments, aid agencies, NGOs, academics and the media	Civil registration and vital statistics (CRVS) systems are likely to break down during large-scale conflicts; definitional issues; under-reporting, double counting and biased reporting
16.1.3	Population subject to violence		●	●		Operational definition of psychological violence; data collection among children
17.19.2	Birth and death registration	●	●		Census	Imprecise demographic methods used to determine completeness

Note: Use of ● indicates preferred data source; ● or ( ) indicate a lower-quality, or non-preferred data source.

<sup>a</sup> Indicators outside the health goal (SDG 3) were selected from indicators of health outcomes, proximal determinants of health, health-service provision or health information systems; in cases where several indicators cover the same area, only a subset are shown above. Other health-related indicators within scope include: 2.1.1 (undernourishment); 4.2.1 (children developmentally on track); 5.2.2 (non-intimate partner sexual violence against women); 5.3.1 (child marriage); 5.6.1 (women making informed decisions on reproductive health); 6.3.1 (wastewater treatment); 11.6.1 (urban waste management); 12.4.2 (hazardous waste management); 16.2.1 (children subject to physical punishment/caregiver aggression); 16.2.3 (youths experiencing sexual violence); and 16.9.1 (birth registration).

<sup>b</sup> Predominantly referring to death registration with medical certification of cause of death.

<sup>c</sup> This category comprises a wide variety of population-based surveys, including demographic and health surveys, general health examination surveys, disease-specific biomarker surveys and living-standard surveys.

<sup>d</sup> Data based on facility contacts, at the primary, secondary or tertiary level.

<sup>e</sup> Indicator 13.1.2 is the same as indicators 1.5.1 and 11.5.1 (all include deaths from natural disasters).



Effective monitoring of SDG indicators requires well-functioning country health information systems that include data from sources such as civil registration and vital statistics (CRVS) systems, household and other population-based surveys, routine health-facility reporting systems and health-facility surveys, administrative data systems and surveillance systems (Table 1.2). Some indicators also rely on non-health-sector data sources. For several indicators, multiple data sources potentially exist. For example, in countries without a well-functioning CRVS system to record births, deaths, and causes of death, household surveys (and sometimes health-facility data) can be used. Sample registration systems (SRS), such as those used in China and India, can also provide valuable information by recording vital events in a subset of the national population, and can serve as a platform for transitioning to a complete CRVS system.

The predominant data sources needed to monitor the health-related SDGs are household surveys and CRVS systems, specifically death registration data (Table 1.2). Household surveys such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) are routinely carried out in many low- and middle-income countries (LMICs) every 3 to 5 years. However, data for some of the SDG indicators that could be measured by household surveys are not routinely collected, such as NCD service coverage indicators in the UHC coverage indicator 3.8.1. In addition, due to their focus on reproductive, maternal, newborn and child health (RMNCH), DHS and MICS may not interview important segments of the population, such as unmarried men or older adults. National health examination surveys carried out in some high- and middle-income countries – such as the National Health and Nutrition Examination Survey (NHANES) in the United States of America – are more comprehensive. All countries should consider implementing routine, comprehensive health examination surveys, with the periodic inclusion of specific in-depth modules, in order to monitor all the relevant indicators efficiently, without overburdening survey respondents. WHO, the World Bank, and the International Household Survey Network (IHSN) are developing a set of standardized short and long survey modules for collecting data on health and health-related SDG indicators as a resource for countries. These modules will be linked to the Survey Solutions tool of the World Bank to enable end-users to build a survey questionnaire that can be implemented in a Computer Assisted Personal Interview (CAPI) platform.

For mortality data, death registration data from CRVS systems are the preferred source. However, in almost all low-income countries, and some middle-income ones, CRVS systems do not function well enough to produce data for monitoring (Table 1.3). Instead, population censuses and household surveys are the main data sources currently available in most LMICs. Population censuses can provide data on levels of mortality by age and sex, and by

subnational unit, particularly if specific mortality questions are included. Household surveys, in particular DHS and MICS, are an important source of mortality data for children through birth histories, and – in some surveys, with greater uncertainty – adults through sibling survival histories.

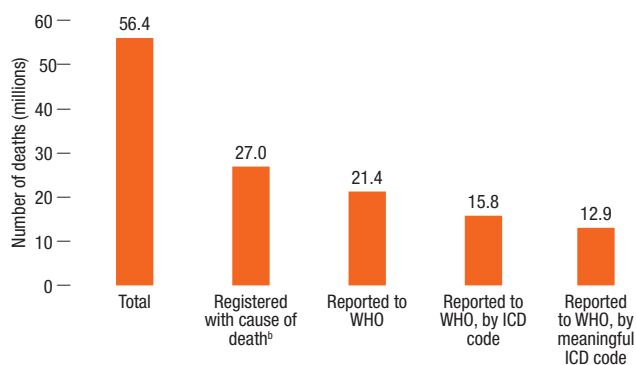
Although data on cause-specific mortality (for example, due to NCDs) can be obtained from household surveys through verbal autopsy, their accuracy and precision are major problems. In general, verbal autopsy modules in national household surveys can provide a general idea of causes of death but do not generate data of sufficient quality to allow for the monitoring of trends over time. Mortality due to some specific injury categories (such as road traffic injury) may be better measured by verbal autopsy, but important biases remain for any injury mortality associated with stigma, such as suicide. Repeated use of a consistent verbal autopsy instrument, sampling method and analysis method to assign cause of death maximizes the utility of verbal autopsy data for monitoring purposes.

Given the limitations of surveys and censuses, well-functioning CRVS systems are ultimately needed to properly monitor mortality and related indicators. However, efforts to strengthen CRVS systems, although crucial, are unlikely to improve statistics in the short term as it generally takes more than a decade to implement a fully functioning system. Developing SRS, with verbal autopsy for community deaths, in conjunction with CRVS strengthening will therefore be essential in bridging the current gap. Examples of countries currently implementing or working towards SRS include Indonesia and Mozambique, while both China and India have long-term positive experience of using of such systems.

### **Data for SDG monitoring: the case of death registration data**

Death registration data, including with medical certification of the cause of death and cause of death coded using ICD, are the preferred source of information for monitoring mortality by cause, age and sex. However, there are major gaps in the coverage of death registration and persisting quality issues in death registration data. The two main dimensions of quality which impede the use of death registration data for public health monitoring are: (a) failure to register some deaths; and (b) missing, incomplete or incorrect information on cause of death. Completeness – defined as the percentage of all deaths in a geographic area that are registered – is a measure of the reach of a death registration system. The cause-of-death information given on the death certificate may be incorrect, incomplete or missing, reducing the utility of the data for public health monitoring purposes. The percentage of deaths certified to one of a short list of leading garbage codes – that is, a cause which is not a valid underlying cause of death or is ill-defined – is an indicator of the quality of cause-of-death information. If too few deaths are registered, or the quality

**Figure 1.1**  
Number of global deaths in 2015, by expected registration/reporting status<sup>a</sup>



<sup>a</sup> Reports to WHO are projected based on 2010 data to allow for reporting lag.

<sup>b</sup> Local death registration, in the absence of a state or national system to compile data, is excluded, as is registration with cause of death based on verbal autopsy. The discrepancy between deaths registered and deaths reported to WHO is primarily due to China reporting only SRS data.

of cause-of-death information is too poor, death registration data cannot be used to reliably monitor mortality by cause.

In 2015, nearly half of all deaths worldwide were registered in a national death registration system with information on cause of death (Figure 1.1), an increase from around one third in 2005. However, only 38% of all global deaths are currently reported to the WHO Mortality Database (7) – which collects information on registered deaths and their causes from WHO Member States. In addition, some countries report their data to WHO using a condensed cause list, thereby limiting assessment of the quality of cause-of-death information. Only around 28% of all global deaths are reported to WHO by ICD code (regardless of ICD revision), and even then many

such deaths are assigned a garbage code,<sup>1</sup> leaving just 23% of deaths reported to WHO with precise and meaningful information on their cause.

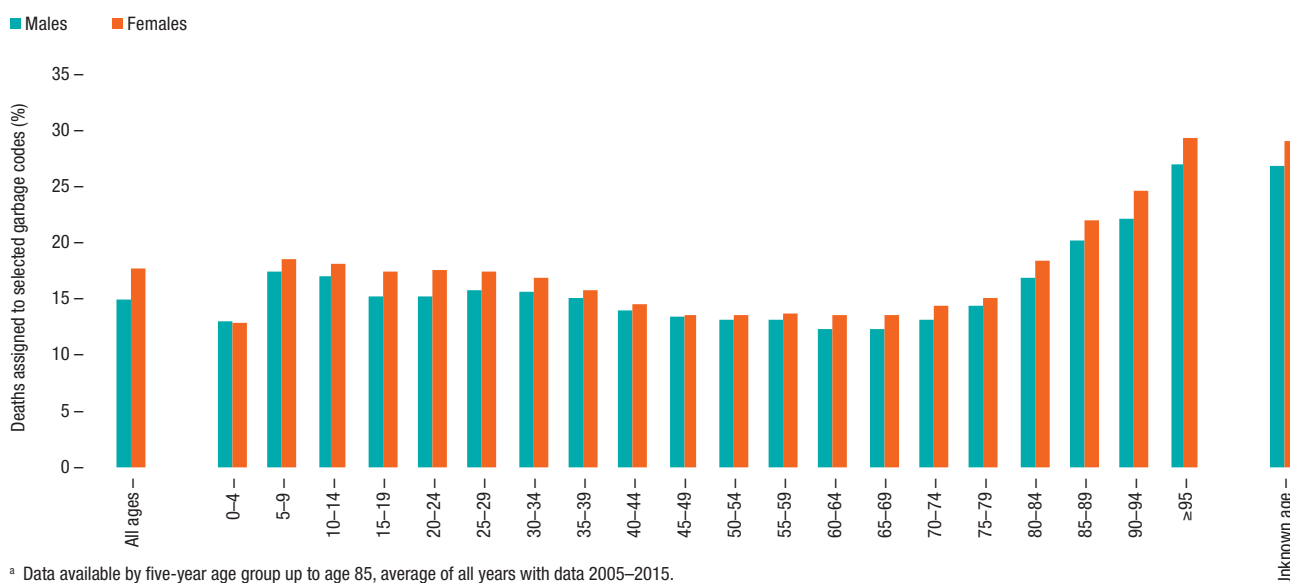
Figure 1.2 shows the proportion of deaths assigned to garbage codes by age (7). The proportion of deaths assigned to garbage codes increases sharply for older age groups. Overall and at all ages over 5 years of age, a larger proportion of male deaths had precise and meaningful information on cause of death than female deaths.

Completeness of death registration and quality of cause-of-death information vary widely between countries, with some countries having high completeness and low use of garbage codes and others vice versa (Figure 1.3) (7, 8). In order to assess the overall quality of death registration data, WHO has developed the concept of “usability” (9), which is defined as the percentage of all deaths which are registered with meaningful cause-of-death information.<sup>2</sup> Usability is a key indicator of the utility of the data generated by national death registration systems in monitoring mortality rates (Figure 1.3). Together with information on reporting status, WHO has used data on usability to categorize national death registration data reported to WHO as very low, low, medium or high quality (Table 1.3).

<sup>1</sup> A selected set of ICD-10 garbage codes were considered in this analysis: A40–A41 (streptococcal and other septicaemia); C76, C80, C97 (ill-defined cancer sites); D65 (disseminated intravascular coagulation [defibrination syndrome]); E86 (volume depletion – for example, dehydration); I10, I26.9, I46, I47.2, I49.0, I50, I51.4–I51.6, I51.9, I70.9, I99 (ill-defined cardiovascular); J81, J96 (ill-defined respiratory); K72 (ill-defined hepatic failure); N17–N19 (ill-defined renal failure); P28.5 (respiratory failure of newborn); Y10–Y34, Y87.2 (injuries of undetermined intent); R00–R94, R96–R99 (signs and symptoms not elsewhere classified). Equivalent ICD-9 codes were extracted when available. WHO plans to review and update a list of leading garbage codes for the assessment of death registration data quality.

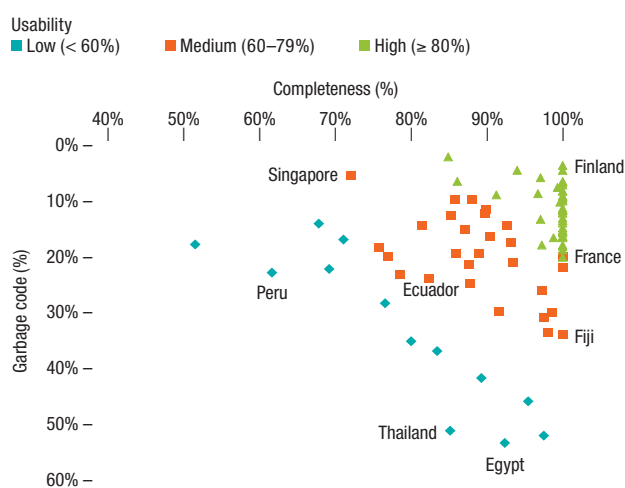
<sup>2</sup> Usability is calculated as completeness multiplied by the proportion of registered deaths that are assigned a meaningful cause of death. (Usability (%) = Completeness (%) x (1-Deaths assigned to a garbage code (%))).

**Figure 1.2**  
Proportion of deaths assigned to selected garbage codes by age and sex, 2005–2015<sup>a</sup>



<sup>a</sup> Data available by five-year age group up to age 85, average of all years with data 2005–2015.

**Figure 1.3**  
Percentage of deaths assigned to a garbage code against completeness, and resulting WHO usability category, selected countries



**Table 1.3**  
Quality of death registration data reported to WHO by Member States, assessed for the period 2005–2015, by WHO region<sup>a</sup>

WHO region	High quality	Medium quality	Low quality	Very low quality or no data	Total
AFR	1	2	1	43	47
AMR	10	18	4	3	35
SEAR	0	0	3	8	11
EUR	33	12	8	0	53
EMR	0	1	7	13	21
WPR	5	5	3	14	27
<b>Global (percentage)</b>	<b>49 (25%)</b>	<b>38 (20%)</b>	<b>26 (13%)</b>	<b>81 (42%)</b>	<b>194</b>

<sup>a</sup> "High quality" refers to countries reporting at least 5 years of data to WHO, reporting latest year of data by ICD code, and with average usability during this period  $\geq 80\%$ . "Medium quality" refers to countries reporting at least 5 years of data to WHO, reporting latest year of data by ICD code, and with average usability  $\geq 60\%$  and  $< 80\%$ ; or to countries reporting at least 5 years of data to WHO, reporting with a condensed cause list, and with average usability  $\geq 80\%$ . "Low quality" refers to countries reporting any data by ICD code with average usability  $\geq 40\%$  and  $< 60\%$ ; or to countries reporting any data with a condensed cause list with average usability  $\geq 60\%$  and  $< 80\%$ . All other countries reporting death registration to WHO are considered to have very low quality data.

A number of countries have now made major improvements in both completeness and quality of cause-of-death assignment in death registration data, and two examples are highlighted later in this report. In Kazakhstan, a confidential audit of deaths among reproductive-age women was implemented to identify all maternal deaths. This then resulted in the correction of death registration data when new maternal deaths were identified (see section 3.1). In the Islamic Republic of Iran, the recording of deaths with detailed cause-of-death information was scaled-up from 5% in 1999 to 90% in 2015 (see section 3.9). These and other success stories have very clearly demonstrated that a long-term strategy of investment in CRVS systems, including regular assessment of the quality of cause-of-death data, can bring about substantial improvements in the data used for monitoring. This in turn allows for more targeted investments in health-system strengthening, and ultimately leads to significant improvements in population health.

## 1.2 Health system strengthening for universal health coverage

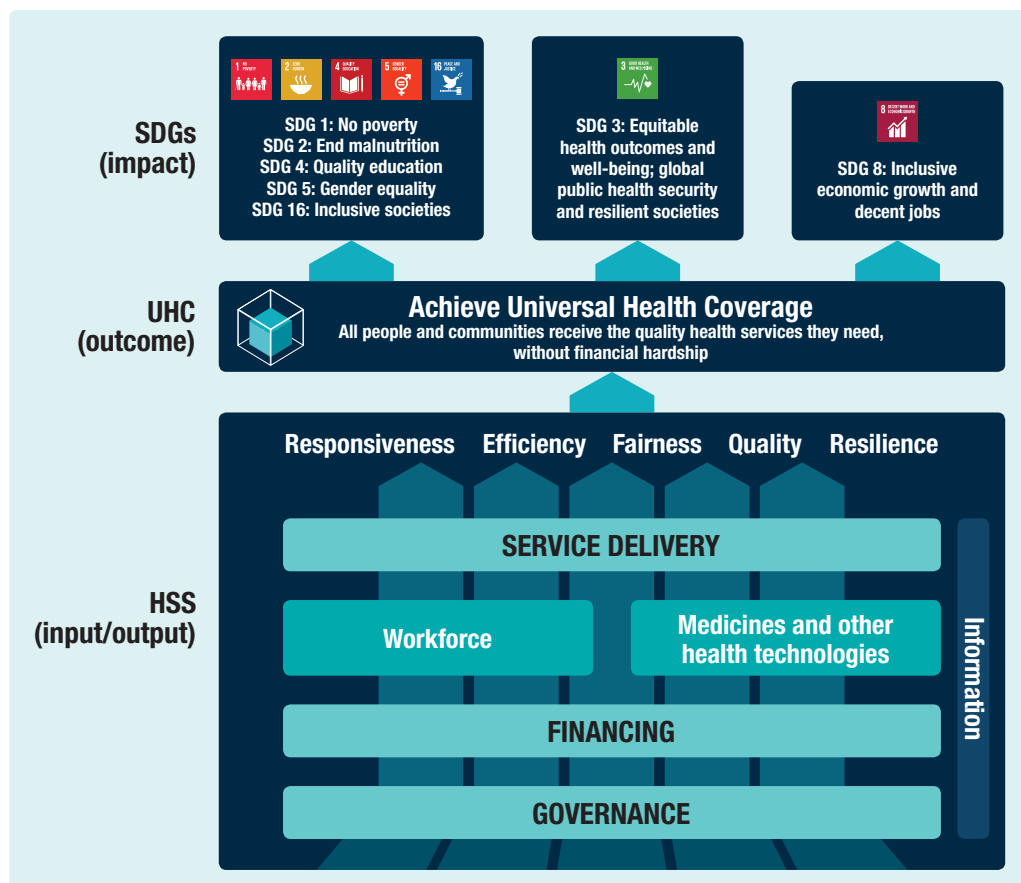
SDG Target 3.8 on achieving universal health coverage (UHC) lies at the centre of SDG 3 on health. Making progress towards UHC is an ongoing process for every country as they work to ensure that all people receive the health services they need without experiencing financial hardship. The health-related targets of the SDGs cannot be met without making substantial progress on UHC (Figure 1.4) (10). Achieving UHC will, in turn, require health system strengthening to deliver effective and affordable services to prevent ill health and to provide health promotion, prevention, treatment, rehabilitation and palliation services. Health system strengthening requires a coordinated approach involving improved health governance and financing to support the health workforce, and provide access to medicines and other health technologies, in order to ensure delivery of quality services at the community and individual levels. As part of this, health information systems will be vital in informing decision-making and monitoring progress. Investments in these areas, financial and otherwise, should seek to increase responsiveness, efficiency, fairness, quality and resilience, based on the principles of health service integration and people-centred care.

The broad focus of the SDGs offers an opportunity to reset and refocus health strategies and programming to strengthen health systems. The MDGs provided an important impetus for making progress in a selected set of health areas – namely reproductive, maternal and child health, and HIV/AIDS, malaria and tuberculosis. However, far less attention was given to the performance of whole health systems, including health services, with the result that the benefits of doing so were not sufficiently emphasized. Many countries lack sound health financing, leading to high out-of-pocket (OOP) payments and financial catastrophe or impoverishment for families. Many countries also have major inadequacies in terms of their health workforce and infrastructure (especially in rural areas), medical products, service quality, information systems and accountability. Weak health systems also leave major gaps in national, regional and global defences against outbreaks of infectious diseases, such as Ebola virus disease and novel strains of influenza.

Since the SDGs expand well beyond the MDGs to embrace NCDs, mental health and injuries, and explicit targets on implementing health services, strengthening health systems becomes the only realistic way of achieving the health-related SDG targets. The platform for achieving all of this is UHC, which requires that effective health services are provided to all who need them, while ensuring that accessing such services does not expose users to financial hardship.



**Figure 1.4**  
Health system strengthening, universal health coverage and the SDGs



The International Health Partnership for UHC 2030 is an initiative coordinated by WHO and the World Bank to enable multi stakeholder action in building and expanding robust and resilient health systems, and ensuring accountability for the progress made towards UHC as a vital part of achieving the health-related SDGs (11). Effective and efficient health system strengthening will require new approaches – such as ensuring a capable and motivated health workforce as outlined by the *WHO Global strategy on human resources for health: Workforce 2030* (12). Coordination will also be needed across the wide range of topic-specific initiatives that will all share the benefits of improved health systems. These include global strategies and plans in the areas of women, children and adolescent health (13), HIV, viral hepatitis and sexually transmitted infections (14), and the prevention and control of NCDs (15). In addition, coordinating efforts to improve health information systems will require the support of initiatives such as the Health Data Collaborative (16).

The challenge of monitoring progress in all of the above strategies and other initiatives to strengthen aspects of health systems can seem overwhelming. However, by selecting a small, representative set of tracer indicators of health service coverage, along with indicators of financial hardship experienced by those accessing health services, a concise summary can be produced of the extent to which health systems are progressing towards the delivery of UHC.

### Monitoring progress

In response to the calls of governments for technical support on UHC monitoring, WHO and the World Bank have developed a UHC monitoring framework. This framework is based on a series of country case studies and technical reviews, and on consultations and discussions with country representatives, technical experts, and global health and development partners. The framework focuses on the two key components of UHC – coverage of the population with quality essential health services and coverage of the population with financial protection. This work led to the adoption of two indicators for UHC within SDG Target 3.8.<sup>1</sup> The United Nations recognizes WHO as the custodian agency for both of these indicators with the World Bank as a partner agency for SDG indicator 3.8.2.

The UHC SDG indicators, supplemented with others, will enable countries to monitor progress in health system strengthening towards UHC at national and subnational levels. WHO has summarized the currently available data in a recently launched UHC data portal (17). Beyond these global assessments, efforts are ongoing across all WHO regions to contextualize UHC monitoring to better reflect

<sup>1</sup> **SDG 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, noncommunicable diseases and service capacity and access, among the general and the most disadvantaged population; and **SDG indicator 3.8.2:** Proportion of population with large household expenditures on health as a share of total household expenditure or income.

specific health system challenges in each region and at country level (18–21). The following sections summarize the methodologies and data used for monitoring the UHC SDG indicators of essential health service coverage and financial protection coverage.

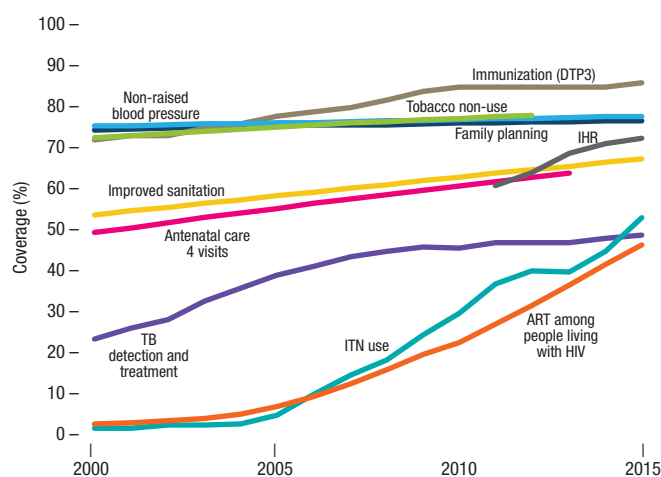
### Coverage of essential health services

SDG indicator 3.8.1 is measured using an index of 16 tracer indicators of health services (Table 1.4). These indicators were selected based on epidemiological and statistical criteria, and following several years of consultation with country representatives, academics and international agencies. The indicators draw on a variety of different data sources, the most important of which are household surveys. Many of the indicators are well studied with United Nations estimates available for Member States.

As shown in Figure 1.5 (17), global coverage of tracer interventions against HIV, TB and malaria have increased substantially since 2000, which is consistent with the massive increase in resources devoted to these disease areas through the Global Fund and the President’s Emergency Plan for AIDS Relief (PEPFAR). Coverage of tracer interventions for maternal, newborn and child health

have seen more modest but steady increases – with some being more rapid, such as DTP3 coverage in the WHO African Region, where an almost 50% increase since 2000 was presumably driven at least in part by GAVI, United Nations agency and donor funding. Antenatal care coverage has increased by 30–60% across regions outside of Europe and the Americas.

**Figure 1.5**  
Trends in global coverage of tracer indicators of essential health services, 2000–2015



**Table 1.4**  
Tracer indicators of the coverage of essential health services

Tracer area	Tracer indicator	Key definitional or methodological challenges
<b>Reproductive, maternal, newborn and child health</b>		
a. Family planning	Demand satisfied with a modern method among women aged 15–49 years (%)	Unmarried women are typically excluded
b. Pregnancy and delivery care	Antenatal care – four or more visits (%)	Quality of antenatal services not captured
c. Child immunization	One-year-old children who have received three doses of a vaccine containing diphtheria, tetanus and pertussis (%)	Does not capture all vaccines in national schedule
d. Child treatment	Care-seeking behaviour for children with suspected pneumonia (%)	Small sample sizes and respondent errors
<b>Infectious diseases</b>		
a. TB treatment	TB cases detected and treated (%)	Determining rate of under-reporting of cases from facility data and/or routine surveillance systems
b. HIV treatment	People living with HIV receiving ART (%)	Mixture of different data sources on HIV prevalence and people receiving ART
c. Malaria prevention	Population at risk sleeping under insecticide-treated bed nets (%)	Defining at-risk population
d. Water and sanitation	Households with access to improved sanitation (%)	“Improved” facilities may not be safely managed
<b>Noncommunicable diseases</b>		
a. Treatment of cardiovascular diseases	Prevalence of non-raised blood pressure (%)	Not specific to health system response – conditional on background prevalence
b. Management of diabetes	Mean fasting plasma glucose (FPG) (mmol/l)	Not specific to health system response – conditional on background FPG levels
c. Cervical cancer screening	Cervical cancer screening among women aged 30–49 years (%)	Does not capture whether effective treatment is available
d. Tobacco control	Adults aged ≥ 15 years not smoking tobacco in last 30 days (%)	Inconsistent indicator definition measured across surveys
<b>Service capacity and access</b>		
a. Hospital access	Hospital beds per capita (in relation to a minimum threshold)	Optimal level unclear and may vary depending on health system structure
b. Health worker density	Health professionals per capita (in relation to a minimum threshold): physicians, psychiatrists and surgeons	Nurses/midwives should be included but hard to measure and define comparably across countries
c. Essential medicines	Proportion of health facilities with basket of essential medicines available	Establishing sampling frame of public and private facilities; confirming quality of medicines in stock
d. Health security	IHR core capacity index	Key informant data

Several tracer indicators of services targeting diseases outside the focus of the MDGs suggest that broader health system strengthening is needed in many countries. For example, the prevalence of hypertension, a key tracer indicator of health services for cardiovascular diseases, has not declined in many low-income countries in Africa and Asia since 2000 – despite the existence of effective and inexpensive treatment that has led to substantial reductions in higher-income countries. Limited data on access to essential medicines during the period 2007–2014 indicate that the median availability of selected essential medicines was only 60% and 56% in the public sector of low-income and lower-middle-income countries (22). Available data for 2005–2015 also indicate that around 40% of countries have less than one physician per 1000 population (23) and less than 18 hospital beds per 10 000 population (17).

The state of health service coverage can be summarized using an index, which averages the coverage values of the tracer indicators. One challenge in working with an index, particularly when tracking progress over time, is the asynchronous timing of data collection for the different indicators both within and across countries. Based on the underlying data sources available since 2010 for each of the tracer indicators (that is, ignoring estimates and projections), the average proportion of indicators used to compute the UHC service coverage index is around 70% across countries globally, with the following WHO regional breakdown:

African Region	74%
Region of the Americas	72%
South-East Asia Region	71%
European Region	65%
Eastern Mediterranean Region	63%
Western Pacific Region	67%

Although other data systems, such as CRVS systems, are typically incomplete in the WHO African Region and WHO South-East Asia Region, data availability for monitoring the coverage of essential health services is relatively high compared to other WHO regions because of the widespread implementation of standardized household health surveys. However, even with available data, many of the tracer indicators shown in Table 1.4 are imperfect proxies of the *effective* coverage of health interventions and services, meaning that they only capture data on access to a particular service – not on whether or not that service is of sufficient quality to improve health.

Summarizing service coverage across key inequality dimensions presents a further challenge because the same disaggregation variables are not collected for all tracer indicators. However, coverage indicators for reproductive, maternal, newborn and child health services for 39 LMIC with available data show reductions in inequality by household wealth quintile between 1995–2004 and 2005–2014 in the median value for average coverage across

indicators. Although coverage levels increased for both the poorest and wealthiest quintiles, the increase was almost three times larger for households in the poorest quintile (24). Thus, there is evidence that progress can be made in reducing inequalities in the coverage of health services. Nevertheless, large inequalities still remain apparent for many indicators, with lower coverage among disadvantaged populations.

## Financial protection

The primary objective of the health-financing system is to promote financial protection in health. At a global level, WHO support for monitoring financial protection is underpinned by the World Health Assembly resolution WHA58.33 on sustainable health financing, universal coverage and social health insurance (25). SDG indicator 3.8.2 focuses on financial protection – and is defined as: proportion of population with large household expenditures on health as a share of total household expenditure or income.<sup>1</sup> Large household expenditures on health are defined in terms of two thresholds: 10% and 25% of total household expenditure or income. This definition was chosen following a consultative two-year process led by the Inter-agency and Expert Group on SDG Indicators and is often referred to as “catastrophic health expenditures”.

SDG indicator 3.8.2 aims to identify people that must devote a substantial share of their wealth or income to pay for health care. The focus is on payments made at the point of use to receive any type of treatment, from any type of provider, for any type of disease or health problem. These payments – also known as out-of-pocket (OOP) payments – exclude any reimbursement by a third party such as the government, a health insurance fund or a private insurance company (26). OOP payments are the least equitable way to finance the health system as they only grant access to the health services and health products that individuals can pay for, without solidarity between the healthy and the sick. And yet OOP payments remain the primary source of funding in many LMIC, where risk-pooling and pre-payment mechanisms both tend to play a limited role (Figure 1.6) (27,28).

OOP payments on health care can be a major cause of impoverishment. This can be monitored by measuring changes in the incidence of poverty<sup>2</sup> and severity of poverty<sup>3</sup> due to OOP payments using a poverty line of US\$ 1.90 per person per day. Such analyses of “impoverishing

<sup>1</sup> Total household expenditure is the recommended measure of household monetary welfare. Income is to be used only if there is no household survey with information on both total household expenditure on health and total household expenditures.

<sup>2</sup> The incidence of poverty is measured by the poverty headcount ratio which simply counts the number of people whose total household expenditure or income is below a given poverty line. Changes in the incidence of poverty due to OOP payments are measured as the difference in poverty headcount ratios due to household expenditure or income gross of OOP payments above a poverty line but household expenditure or income net of OOP payments below a poverty line.

<sup>3</sup> The severity of poverty is measured by the poverty gap ratio, which is the average amount by which total household expenditure or income falls short of the poverty line as a percentage of that line (counting the shortfall as zero for those above the poverty line). It lies between 0% when no one in a country is poor and 100% when everyone has zero consumption expenditure or income and the poverty line is positive.

**Figure 1.6**  
Out-of-pocket expenditures as a fraction of total health expenditures,<sup>a</sup> 2014



<sup>a</sup> Circles are proportional to population size.

health expenditure” demonstrate the interdependency between different SDG targets – specifically, eradicating extreme poverty (SDG Target 1.1) and achieving UHC (SDG Target 3.8).

The primary source of data for estimating levels of both catastrophic and impoverishing health expenditure is a household survey with information on both household expenditure on health and total household expenditures, as routinely conducted by national statistics offices. Based on information available to WHO in February 2017, the extent of data availability is fair, with about half of all WHO Member States having at least one data point since 2005, with the following WHO regional breakdown in terms of proportion of countries having such data:

African Region	62%
Region of the Americas	37%
South-East Asia Region	82%
European Region	59%
Eastern Mediterranean Region	43%
Western Pacific Region	37%
All WHO Member States	52%

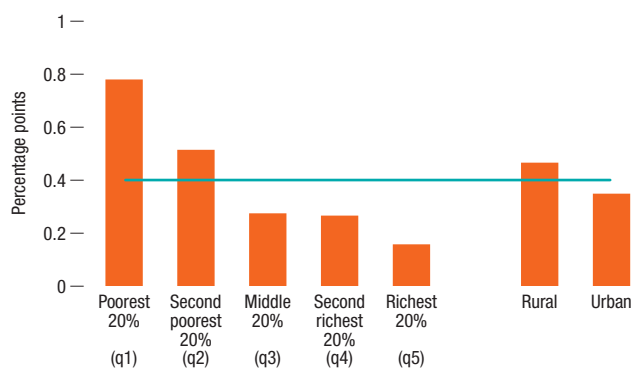
Based on the latest available household expenditure survey data for 117 countries as of March 2017 (median year 2008), around 9.3% of the population on average faced OOP payments in excess of 10% of their budget (total household expenditure or income), including on average 1.8% of the population who spent 25% or more of their budget on health care.<sup>1</sup>

Across 106 countries with data (median year 2009) the average incidence of poverty was about 0.65 percentage points higher than it would have been without OOP payments for health care, based on a US\$ 1.90 per capita per day poverty line. This means an additional 4.6% of the population ended up with less than US\$ 1.90 per capita per day after paying for health care. Looking at the extent to which total expenditure or income fell short of the poverty line, the severity of poverty as measured by the poverty gap<sup>2</sup> was 7.5% higher than it would have been without any OOP payments for health care. As shown in Figure 1.7, OOP health payments exacerbate the severity of poverty the most among the poorest and those living in rural areas.

<sup>1</sup> Average figures are unweighted.

<sup>2</sup> The poverty gap is the average amount by which total household expenditure or income falls short of the poverty line as a percentage of that line (counting the shortfall as 0 for those above the poverty line).

**Figure 1.7**  
Average changes in the poverty gap due to OOP payments, by quintiles of daily per capita total household expenditure or income, and by rural or urban location, 1991–2015 (median year 2009)<sup>a</sup>



<sup>a</sup> Analysis based on a US\$ 1.90 per capita per day poverty line, from the latest available survey for 106 countries with available estimates as of February 2017. The horizontal line indicates the average change across the 106 countries.

### Progressive realization

Despite health system reforms, all countries struggle to extend the coverage of quality services with financial protection, including high-income countries with long-established institutional arrangements for health systems that may, for example, be working to maintain their levels of coverage in the face of rising costs. Demographic and epidemiological changes play an important role along with technological advances and changes in patterns of service utilization. Meeting the health-related SDG targets will therefore require a progressive realization of UHC, through significant efforts to strengthen health systems. This can only be achieved through committed and coordinated investments in health governance and financing; health workforce, medicines and other health technologies; and health information systems. The key to delivering high-quality, people-centred and integrated health services is to: (a) establish efficient, decentralized and integrated health systems staffed by motivated and well-trained professionals; and (b) provide – and ensure appropriate use of – the full range of quality-guaranteed essential medical products, financed in ways that guarantee predictable and adequate funding for the system while at the same time offering financial protection to its users.

### 1.3 Health equity – leave no one behind

The 2030 Agenda for Sustainable Development emphasizes the need for monitoring to go beyond the measurement of aggregate performance to ensure that no one is left behind. This means that data for health-related SDG targets should be disaggregated for key disadvantaged subgroups within countries and health inequality measures calculated. In keeping with the mutually reinforcing nature of the SDGs, progress towards this end will not only contribute to the achievement of the health-related targets themselves but also to SDG 5 on achieving gender inequality, SDG 10 on

reducing inequalities and to SDG target 17.18.1 on data disaggregation.

As evidenced by recent WHO reports (29, 30), health inequalities within and between countries can be substantial. It is therefore now crucially important to reinforce and reform national health information systems to ensure that they have the capacity to collect, analyse and report equity-relevant data, and to support the systematic integration and use of such data in decision-making and in ongoing national and subnational planning, programming, monitoring, reviewing and evaluation.

### Trends in health inequality

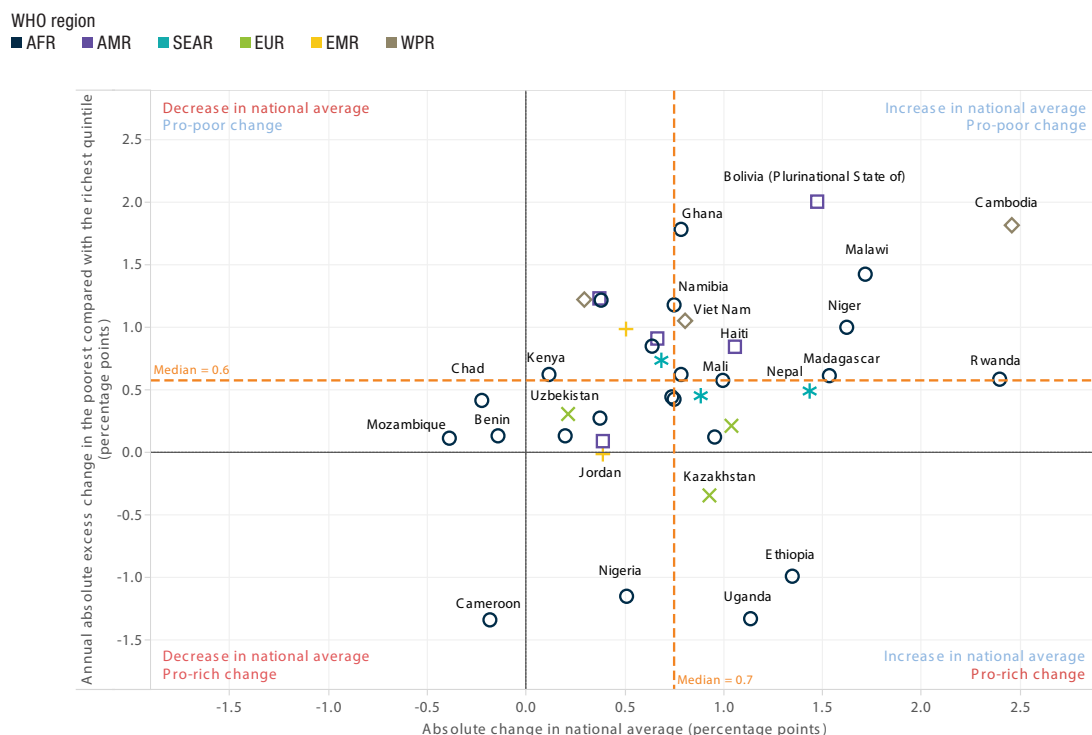
WHO *World Health Statistics 2013* examined the health gaps between countries and concluded that concerted efforts to achieve the MDGs and other health goals had led to their reduction, at least in absolute terms, between high-resourced and low-resourced countries (31). It is harder to assess trends in within-country health inequality due to a lack of comparable and relevant data across health indicators in a large number of countries. It is important here to distinguish between the concepts of health inequality – differences in health indicators among population subgroups – and income or wealth inequality. Although there has been an average increase in income inequality in both developing countries and many high-income countries in recent decades (32), health inequalities have not necessarily followed the same pattern.

Recent WHO global health inequality reports (29, 30) and a number of recent studies (33, 34) have indicated that overall, and in most countries with data available, health inequalities have been decreasing in terms of reproductive, maternal and child health intervention coverage (Figure 1.8) (24), and child mortality. On the other hand, trends in child malnutrition inequalities are mixed, with no overall increase or reduction at the global level (29, 35).

There are currently no comparable cross-national studies of trends in adult mortality, life expectancy, NCDs or injuries. There is, however, evidence of widening health inequalities in some high-income countries. For example, several studies found widening inequalities in life expectancy in the United States of America – with falling life expectancy among non-Hispanic white Americans, particularly those of lower socioeconomic status (36–38). Suicide, drug poisoning and violence were major contributors to increased mortality. Conversely, one study of health outcomes for 45 English subregions grouped into quintiles of average deprivation (39) found that between 1990 and 2013, the range in life expectancy remained 8.2 years for men and decreased from 7.2 years in 1990 to 6.9 years in 2013 for women. Trends in NCD risk factor inequalities are likely to vary depending on the country and risk factor, with a lack of comparable data precluding any global understanding of these (40).



**Figure 1.8**  
Composite coverage index of reproductive, maternal and child health interventions: change over time in national average, and in poorest and richest quintiles, in 39 LMIC<sup>a</sup>



<sup>a</sup> Data taken from DHS and MICS 1995–2004 and 2005–2014. Each country is represented by the shape corresponding to its WHO region. Dashed orange lines indicate the median values (middle points). Blue and red text indicates desirable and undesirable scenarios, respectively. For each study country, annual absolute change in national average was calculated by subtracting the national coverage in survey year 1 (conducted in 1995–2004) from the coverage in survey year 2 (conducted in 2005–2014) and dividing by the number of intervening years. Annual absolute excess change was calculated by subtracting the annual absolute change in quintile 5 from the annual absolute change in quintile 1.

## Health inequality monitoring

Monitoring health inequality helps to identify the health “gap” for disadvantaged population subgroups, and to ensure that policies, programmes and practices are successful in reaching the most vulnerable. Additional information on the reasons behind the differences in health provides decision-makers with the information they need to more effectively understand the barriers to health and to design interventions and approaches to overcome them.

Developing equity-oriented health information systems entails country capacity-building to support the collection, analysis and reporting of data for the SDG health and health-related indicators by population subgroups. Disadvantaged groups may be defined in terms of their economic status,

educational level, sex, age, place of residence, ethnicity, migrant status, disability status, and other characteristics appropriate to the country context, such as caste.

Table 1.5 lists potential ways of improving data sources for health inequality monitoring (41). Household surveys and population censuses allow for the collection of a range of inequality dimensions at individual and household level, including socioeconomic variables, minority population status and disability status. Household survey programmes such as DHS and MICS currently offer comparable data across a large number of developing countries (42, 43) and are usually repeated over time. The main disadvantage of household surveys for inequality monitoring is the requirement for relatively large sample sizes to allow

**Table 1.5**  
Improving data sources for health inequality monitoring

Data source				
Population census	CRVS	Household survey	Institution-based records	Surveillance system
<b>Potential means of improvement</b>				
<ul style="list-style-type: none"> <li>• Include individual or small area identifiers</li> </ul>	<ul style="list-style-type: none"> <li>• Expand coverage</li> <li>• Include individual or small area identifiers</li> <li>• Include at least one socioeconomic indicator (for example, educational level)</li> <li>• Include cause of death, birth weight and gestational age (if not included)</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat surveys regularly</li> <li>• Harmonize survey questions over time</li> <li>• Increase sample sizes</li> <li>• Include individual or small area identifiers</li> <li>• Include a comprehensive list of relevant inequality dimensions</li> </ul>	<ul style="list-style-type: none"> <li>• Standardize electronic records across institutions</li> <li>• Include individual or small-area identifiers</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate surveillance functionality into the national health information system</li> <li>• Include individual or small area identifiers</li> </ul>

meaningful subgroup comparisons, while population censuses are infrequent (typically conducted once every 10 years) and do not usually cover as many topics as household surveys. CRVS systems usually include data on place of residence and may also collect individual measures of socioeconomic disadvantage. In the case of death registration, there are concerns about the accuracy of individual measures obtained from registration informants. Even so, well-functioning registration systems and health information systems enable some countries to report comprehensively on health indicators disaggregated by relevant inequality dimensions. Health-facility data can be used at lower administrative levels such as districts, but fragmentation and poor quality may hinder their wider use. In addition, health-facility data exclude people not using facility services, who are also likely to be the most disadvantaged.

In many countries substantial investments will be required to build capacity for health inequality monitoring. This will include investments in developing and strengthening data-collection practices for different data sources, including household health surveys, censuses, CRVS systems and health-facility records. For example, household health surveys can be expanded to cover topics for which data are often unavailable, such as NCDs and injuries. Countries are also urged to move towards the implementing of standardized electronic facility-reporting systems, which enable more efficient data processing compared to the pen-and-paper method. Further improvement opportunities include allowing for the linking of different data sources through the integrating of small-area identifiers such as postal codes, or individual identifiers such as personal identification numbers, into data-collection processes. Particular attention should be given to ensuring adequate personal identity protection measures and safe data storage. In addition, ethical safeguards such as the Fundamental Principles of Official Statistics or the Declaration on Professional Ethics of the International Statistical Institute should be adopted and enforced with a view to creating an institutional framework that helps to prevent the misuse of data (44). In addition to the improvements in data collection mentioned above, many countries also need to enhance technical expertise in health inequality analysis and reporting.

National health inequality monitoring is the foundation of global health inequality monitoring, which will require comparable data and indicators both within and across countries to track the progress made in international initiatives such as the SDGs and UHC. The WHO Health Equity Monitor (45) is an example of a global database that provides disaggregated and comparable data on RMNCH. WHO has also developed other tools and resources to assist its Member States in monitoring health inequality (Box 1.1) and has conducted training workshops in a number of regions.

#### Box 1.1 Selected WHO tools and resources for health inequality monitoring<sup>a</sup> and data use

The WHO Health Equity Monitor data repository and theme page provide comparable and disaggregated RMNCH data. Aiming to serve as a platform for both global and national health inequality monitoring, the Health Equity Monitor data repository covers over 30 RMNCH indicators, with data from more than 280 DHS and MICS across 102 countries. The theme page supports the analysis and interpretation of disaggregated data by highlighting key messages and demonstrating innovative reporting approaches.

- The theme page can be accessed at: [www.who.int/gho/health\\_equity/en/](http://www.who.int/gho/health_equity/en/)
- The data repository can be accessed at: [http://apps.who.int/gho/data/node.main.HE-1540?lang\\_en](http://apps.who.int/gho/data/node.main.HE-1540?lang_en)

The WHO *Handbook on health inequality monitoring: with a special focus on low- and middle-income countries* is a resource designed to support the development and strengthening of health inequality monitoring systems at national level. The handbook provides an introduction to health inequality monitoring concepts, and describes a step-wise approach to monitoring, drawing from examples from LMIC.

- The handbook is available at: [www.who.int/gho/health\\_equity/handbook/en/](http://www.who.int/gho/health_equity/handbook/en/)

The WHO Health inequality monitoring eLearning module is based on the content and organization of the *Handbook on health inequality monitoring: with a special focus on low- and middle-income countries*. The eLearning module allows the learner to build up a theoretical understanding of health inequality monitoring through self-directed progressing through the material. Learner engagement is encouraged through discussion points, application exercises, quiz questions and suggested readings.

- The eLearning module is available at: [extranet.who.int/elearn/course/category.php?id](http://extranet.who.int/elearn/course/category.php?id)

The WHO Health Equity Assessment Toolkit (HEAT) was developed as an online tool for health inequality analysis. HEAT enables users to perform health inequality summary measure calculations using an existing database of disaggregated data, and to create customized visuals based on disaggregated data or summary measures. A new edition of the software package – HEAT Plus – is currently under development and will allow users to upload and work with their own database.

- HEAT can be accessed at: [http://www.who.int/gho/health\\_equity/assessment\\_toolkit/en/](http://www.who.int/gho/health_equity/assessment_toolkit/en/)

The WHO Innov8 approach for reviewing national health programmes is intended to support operationalization of the SDG commitment to “leave no one behind”. Innov8 is an eight-step analytical process undertaken by a multidisciplinary review team. This then leads to recommendations for improving programme performance through concrete action to address health inequities, support gender equality and bring about the progressive realization of UHC and the right to health, and address crucial social determinants of health.

- Innov8 materials can be accessed at: <http://www.who.int/life-course/partners/innov8/en/>

<sup>a</sup> Extracted from: *State of inequality: childhood immunization*. Geneva: World Health Organization; 2016.

### Understanding the “why” behind inequalities

Health inequality monitoring identifies where inequalities exist and how large they are. It is also important to understand why these inequalities exist. Quantitative studies help to identify the relationships between potential determinants and the health indicators of interest. There are also more specific analytical techniques to further break down the determinants of health inequalities. It is also important that national health information systems have the capacity to link with, and track data from, other sectoral domains to evaluate other factors (such as social protection or environmental determinants) that influence health and health inequalities.

Additional qualitative data and participatory analysis may enable the “unpacking” of the drivers behind health inequalities at national and subnational levels. For example, informant interviews can be carried with health professionals to discuss bottlenecks in system performance that may influence inequalities. Focus groups can also be conducted with the target population for health interventions, and should include people who

access and complete treatment and, importantly, those who do not access or do not complete treatment. Focus groups can provide information on demand-side issues that more disadvantaged subpopulations disproportionately face – often linked to adverse social and environmental determinants as well as gender norms, roles and relations. Other measures include community monitoring efforts, such as community scorecards, and reflect a human-rights-based approach to planning and implementation. Joint stakeholder meetings – at which decision-makers, providers, communities and partners meet to review the quantitative and qualitative findings on who is being left behind and why – provide vital inputs needed to review plans and redesign services and financial protection measures.

### **Strengthening use of data on who is being left behind and why**

Data collection, analysis and reporting on health inequalities and their drivers will not be sufficient, in themselves, to ensure that no one is left behind during progress towards the SDGs. A crucial next step is data use. Making changes in policies, programmes and budgetary allocations will require a systematic approach to demand-generation for data, informed by a mapping of the most strategic entry points across all levels of the health system and at cross-governmental level.

One such entry point will be National Health Policies, Strategies and Plans (NHPSP) (46), many of which will be renewed in the coming years and can be adapted to further synergize with the SDGs. In support of policy-making and programming that incorporate a leave-no-one-behind focus, WHO launched its *Strategizing national health in the 21st century: a handbook* (47) that includes a cross-cutting focus on equity. In NHPSP and associated subnational plans, data on health inequalities can be incorporated into situation assessments, priority setting/prioritization processes, and monitoring, evaluation and review approaches. It is then essential that corresponding measures and approaches to address inequities feature in the main implementation lines of the NHPSP and in budgeting. Such measures could include closing remediable and unjust coverage gaps between sexes, by rural/urban area or by income quintiles, as well as improving health information systems to be more equity responsive. The NHPSP can, along with cross-governmental development strategies, also incorporate a strengthened focus on intersectoral action for health and equity (47). Generating and using data on the social and environmental determinants of health will be important for this.

NHPSP may include targets linked to the strategic directions and key objectives of the health sector. There will thus be opportunities to develop targets in support of the concept of progressive universalism (48). Under this concept, the more disadvantaged subpopulations benefit at least as much as more advantaged subpopulations in reforms aimed at achieving UHC.

It is also important that national health information strategies include an appropriate focus on health inequality monitoring, with related strengthening of data sources, analysis capacity, reporting and dissemination, and the linking of data across sectoral domains. National health information strategies, if sufficiently equity-oriented, can be important mechanisms for generating data demand, and hence ensuring accountability for leaving no one behind in the context of the SDGs.

A further entry point for using data on health inequalities and their drivers occurs during the regular and ongoing review of health programmes. Data on the subpopulations not accessing programme services, not obtaining effective coverage and/or experiencing financial hardship as a result of service usage can feed into programme performance reviews. This information can inform adjustments to programming that help close coverage gaps and reduce inequities. The WHO *Innov8 approach for reviewing national health programmes to leave no one behind* (49) (Box 1.1) can help to generate demand for the use of data on health inequalities and their drivers.

## **1.4 Sustainable health financing**

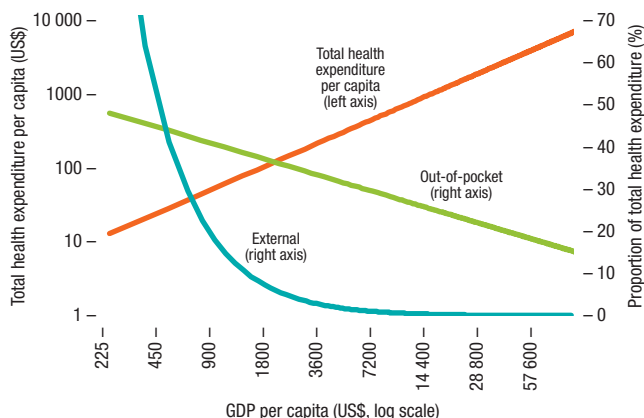
Sustainable health financing means that the obligations that a health system has with respect to what a population is entitled to receive – as a country seeks to progress towards UHC – are balanced with its ability to meet those obligations given available resources (50). Following a brief summary of recent trends in health financing, this section focuses on the approach countries can take to financing health in the SDG era.

### **Trends**

**Across income levels** – on average, as economies grow then total health expenditure per capita increases. This overall increase in the level of total health expenditure masks shifting dynamics with respect to the source of funds. As countries move from low-income to lower- and upper-middle income status, both external (that is, donor) sources and out-of pocket (OOP) sources<sup>1</sup> as a proportion of total health expenditure tend to decline, with the proportion of total health expenditure coming from public (that is, government) sources tending to rise. However, these trends do not all happen at the same pace. The decline in the proportion of total health expenditure coming from external sources tends to happen at an average lower country income level than the decline in that coming from OOP sources (Figure 1.9) (27, 28, 51).

<sup>1</sup> OOP sources refers to payments made by patients at the point of use to receive any type of service, from any type of provider, for any type of disease or health problem. See section 1.2 for more discussion on OOPs.

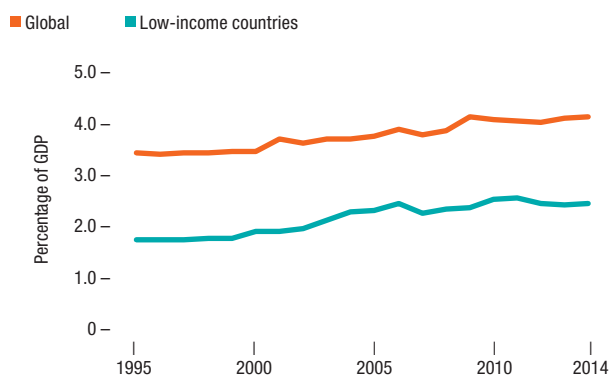
**Figure 1.9**  
Health financing patterns across income levels, 2014<sup>a</sup>



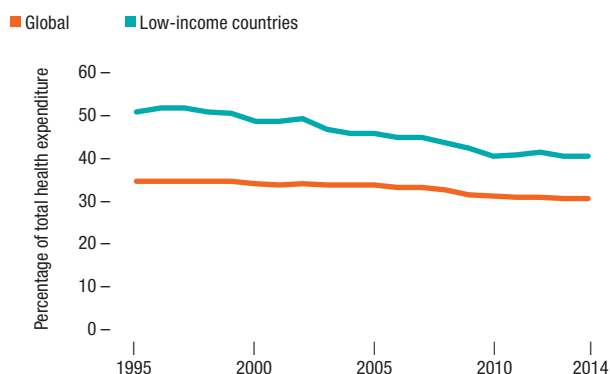
<sup>a</sup> Figure shows trend lines of best fit based on observed values for all countries.

**Across time** – between 1995 and 2014 there was a general slight increase in the level of health spending from public sources both globally and in low-income countries (Figure 1.10) and a slight decline in the proportion derived from OOP sources (Figure 1.11) (27). The proportion of total health expenditure in low-income countries coming from OOP sources during this same period was higher than the global average (Figure 1.11), while the proportion coming from public sources was lower than the global average (Figure 1.12) (27).

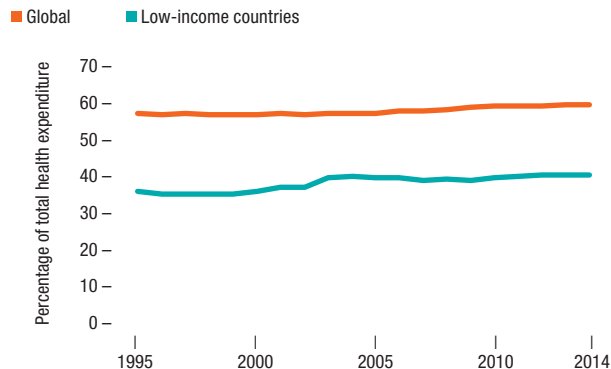
**Figure 1.10**  
Public expenditure on health as a percentage of GDP, 1995–2014



**Figure 1.11**  
Out-of-pocket spending as a percentage of total health expenditure, 1995–2014



**Figure 1.12**  
Public expenditure on health as a percentage of total health expenditure, 1995–2014

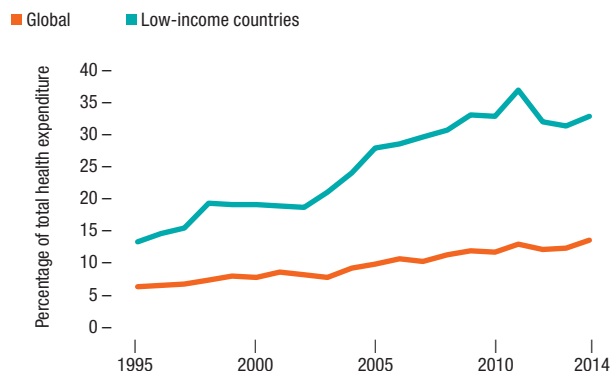


Despite a strong political push at both the global and regional levels to prioritize public spending on health to support progress toward UHC, health as a share of total government spending on average increased only modestly worldwide (Figure 1.13) (27). Furthermore, following large increases in the proportion of total health expenditure derived from external sources in the 2000s in low-income countries there are now indications that the rate of increase is now slowing or even reversing (Figure 1.14) (27).

**Figure 1.13**  
Public expenditure on health as a percentage of general government expenditure, 1995–2014



**Figure 1.14**  
External sources as a percentage of total health expenditure, 1995–2014



Such trends underscore the challenge of implementing financial protection measures, particularly in low-income countries where continued concerted efforts are required to address persistently high OOP spending levels.

## Health financing in the SDG era

UHC stresses that all programmes and priority interventions fall within the overall health system and are part of coverage objectives (1). Unlike the MDG era, during which a fragmented approach to financing specific diseases or interventions was often taken, the focus now is on how to sustain increased effective coverage of priority interventions not simply specific programmes. UHC brings these and other issues together under a common umbrella with a system-wide focus that is needed to tackle the challenges of sustainability (52).

One such important challenge is ensuring an increased emphasis on domestic public sources of revenue for the health sector. Data obtained in a number of countries demonstrate clearly that, on average, greater public spending on health is associated with a lower dependence of health systems on potentially impoverishing OOP payments (53). Due to the current global economic climate, and as countries transition away from donor support as their economies grow, there is now a greater emphasis being placed on domestic public sources of revenue to finance the health system (54, 55). This requires concerted efforts by governments to provide public funding for health services derived from general taxes (56). In particular, many countries have explicitly used general budget revenues to expand coverage of health interventions for the poor, for people in the informal sector or for the entire population. This shift requires donors and countries alike to refine the ways in which aid is targeted, while requiring governments to improve overall domestic resource-generation efforts through improved national taxation systems that are both equitable and efficient (57).

Another important challenge is to develop comprehensive approaches that go beyond framing sustainability as a revenue issue alone, and which also address system inefficiencies and expenditure management problems (58). Sustaining current and improved levels of health service coverage will require efforts to address the ways in which currently available resources are allocated and used. The crucial importance of such a dual “revenue-expenditure” focus is underscored by recent evidence that shows wide variations in key measures of health service coverage and financial protection at very low levels of public spending on health (< PPP\$ 40 per capita). It has been noted that some countries achieve coverage levels more than double those observed in other countries with similar levels of spending (59). Such results emphasize that ensuring sustainability is not about meeting a specific spending target or advocating for funding streams for a particular programme, because progress towards UHC will not depend simply on the level of health spending. In all countries, addressing existing system bottlenecks, constraints and inefficiencies is essential for sustaining progress towards achieving UHC (59).

## Strategic priorities

While there is no single “best model” of health financing, there exist a number of key strategic priorities for sustaining progress towards UHC that are applicable across country contexts.

- **Continued importance of the fundamentals of good health financing policy** – while specific systems will vary, there is now convergence around the desirable attributes of national health financing arrangements needed to make progress towards UHC. These include: (a) moving towards a predominant reliance on compulsory (that is, public) funding sources for the health system (60); (b) reducing fragmentation in pooling to increase the ability of the health system to redistribute available prepaid funds to meet health needs and protect against the financial risk of paying for care (61–64); and (c) increasingly link the payment of providers to information on their performance and to the health needs of the populations they serve (“strategic purchasing”) (54).
- **Increasing overall government budget revenues** – this is central to mobilizing resources for the health sector. As outlined in the Addis Ababa Action Agenda, revenue-raising involves enhancing revenue administration through progressive tax systems, improved tax policy, more efficient tax collection and reduced illicit financial flows (65). These key elements underpin strong fiscal capacity, which in turn is essential for health financing. Without them, systems will be more dependent upon private funding sources, such as OOP spending and voluntary health insurance – high levels of which are associated with inequity and poor financial protection.
- **Productive dialogue between the health sector and finance authorities tasked with allocating government resources** – this should be done at the sectoral level (not at the level of a single programme or disease intervention) and should focus on the overall level of funding for health. Such communication channels are important in aligning health-financing reform strategies with public financial management rules, and enable health systems to take real steps towards results-oriented accountability rather than merely focusing on input control and budget implementation.
- **Move away from silos** – this will require tackling the issues of how resources for health are apportioned and how the overall health system is designed and organized. At present, externally financed vertical health programmes are often in place, and frequently operate independently of the rest of the health system so as to focus resources on a single disease or intervention. The rationale for such a narrow organizational approach may no longer make sense when these programmes are domestically financed. Rather, in the context of overall



health system strengthening efforts, the efficiency and general effectiveness of programmes might be improved if certain key aspects were better integrated or coordinated with the rest of the health system. For example, the unifying of previously duplicative and uncoordinated information and data systems can result in important benefits in terms of both the efficiency and coherence of the overall system. More generally, the sustainability challenge needs to be reframed away from programmes per se and towards increased effective coverage of priority health services.

## 1.5 Innovation, research and development

The health-related SDGs include daring and audacious targets, such as the SDG Target 3.2 to end preventable child mortality and SDG Target 3.3 to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases (NTDs) by 2030. These aims will not be achieved in all countries simply by continuing past improvements. Instead, innovation will be needed, both in technologies and in the means of implementation of activities. The WHO Global Observatory on Health Research and Development (R&D) (66) (hereafter referred to as “the Observatory”) maps and analyses data on health R&D, including on funding streams for innovation in health technologies, with the goal of improving access to these technologies through better coordination of new R&D investments based on public health needs.

### Health R&D – innovation and access to medicines

Health R&D is vital not just in ensuring the availability of appropriate health technologies but also in ensuring access by all affected populations. Ensuring access to health technologies is vital for the protection and promotion of health. However, despite improvements in recent decades, innovation for new products remains focused away from the health needs of those living in the poorest countries. For example, as little as 1% of all funding for health R&D is allocated to diseases that are predominantly incident in developing countries, such as malaria, TB and NTDs, despite these diseases accounting for more than 12.5% of the global burden of disease (67, 68). The result is diseases which are considered to be “neglected”, with insufficient incentives to stimulate market-driven investments. These equity concerns exist not only on an international level, but also within countries, with inequities in availability, affordability and acceptability – the three dimensions of access to health technologies and services.

New health technologies, such as medicines, vaccines and diagnostics, are also becoming increasingly expensive. WHO collaborates with key partners – including the World Trade Organization, the World Intellectual Property Organization and other relevant intergovernmental organizations – on public health, intellectual property and trade-related issues, and in particular on the key role of intellectual property

rights in promoting innovation and its impact on access to medicines. This includes efforts to increase transparency in the patenting of essential medicines and to promote access to medicines through different means, including through the use of Trade-Related Aspects of Intellectual Property Rights (TRIPS) “flexibilities” and de-linking the cost of developing technologies from their market price.

### The establishment of the WHO Global Observatory on Health R&D

In May 2013, the Sixty-sixth World Health Assembly specifically mandated the establishment of the Observatory in resolution WHA66.22 to:

*...consolidate, monitor and analyse relevant information on health research and development activities...with a view to contributing to the identification and the definition of gaps and opportunities for health research and development priorities, and supporting coordinated actions on health research and development.*

The Sixty-ninth World Health Assembly in May 2016 then re-emphasized the central role of the Observatory and requested the establishment of an expert committee on health R&D to set priorities for new investments based on information primarily provided by the Observatory. The Observatory was launched in January 2017 after feedback on a demonstration version released in 2016. This global-level initiative aims to achieve the goals set out in resolution WHA66.22 by:

- consolidating, monitoring and analysing relevant information on the health R&D needs of developing countries
- building on existing data-collection mechanisms
- supporting coordinated actions on health R&D.

By doing so, the Observatory will contribute towards achieving the SDG targets, specifically SDG Target 3.b and SDG Target 9.5 (Box 1.2).

#### Box 1.2 SDG targets and indicators related to health R&D

##### • SDG Target 3.b

Support the research and development of vaccines and medicines for the communicable and noncommunicable 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

**SDG indicator 3.b.2:** Total net official development assistance to medical research and basic health sectors

##### • SDG Target 9.5

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

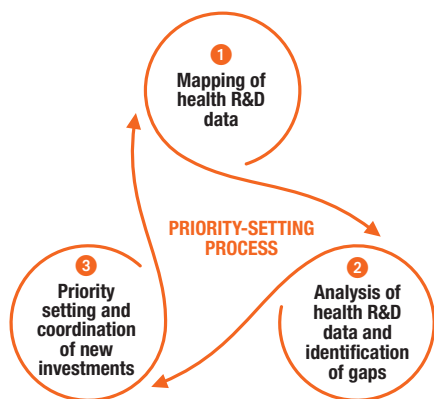
**SDG indicator 9.5.1:** Research and development expenditure as a proportion of GDP

**SDG indicator 9.5.2:** Researchers (in full-time equivalent) per million inhabitants

## Mapping and analysis of health R&D data for coordinated priority setting of new investments

The process of meeting the health R&D needs for achieving the SDGs can be broken down into three stages (Figure 1.15).

**Figure 1.15**  
Three stages for an informed and coordinated priority-setting process for new R&D investments based on public health needs



Implementation of these stages will lead to the rational allocation of R&D resources to meet priorities based on population needs. The Observatory was developed to work across all three stages – in the case of stage 3, through its close interaction with the newly established WHO Expert Committee on Health R&D.

## The content of the Observatory – and how it can be used

The Observatory is structured around the following six areas:

- **Monitoring** – bringing together data from global data sources that allow health R&D activities to be monitored, with a description of the scope and limitations for each set of data. Examples include R&D inputs such as funding flows or availability of human resources; R&D processes such as clinical trials or tracking of health technologies in the pipeline for new product development; and R&D outputs such as research publications.
- **Benchmarking** – comparing health R&D activities and performance across countries – for example, in terms of expenditures on, or research capacity for, health R&D relative to other criteria such as the disease burden.
- **Indicators** – tracking indicators that are closely linked to the SDG targets relating to health R&D, for example, SDG indicators 3.b.2, 9.5.1 and 9.5.2.
- **Analysis** – identifying strategic R&D needs, priorities and gaps for specific diseases through expert assessment, with preliminary analyses currently available for TB, malaria and leishmaniasis.
- **Databases and resources** – providing users with access to a range of health R&D-related information.
- **Classifications and standards** – providing data classification standards used by the Observatory as a step towards catalysing and promoting increased uniformity in the collecting and sharing of R&D data.

## SDG monitoring data available from the Observatory

Data for monitoring SDG indicator 3.b.2 and the health-related component of SDG indicator 9.5.1 are available from the Observatory, and are summarized below. Figure 1.16 (69) shows the official development assistance (ODA) for

**Figure 1.16**  
ODA for medical research and basic health sectors as a percentage of GNI and of total ODA, by donor country, 2010–2015<sup>a</sup>

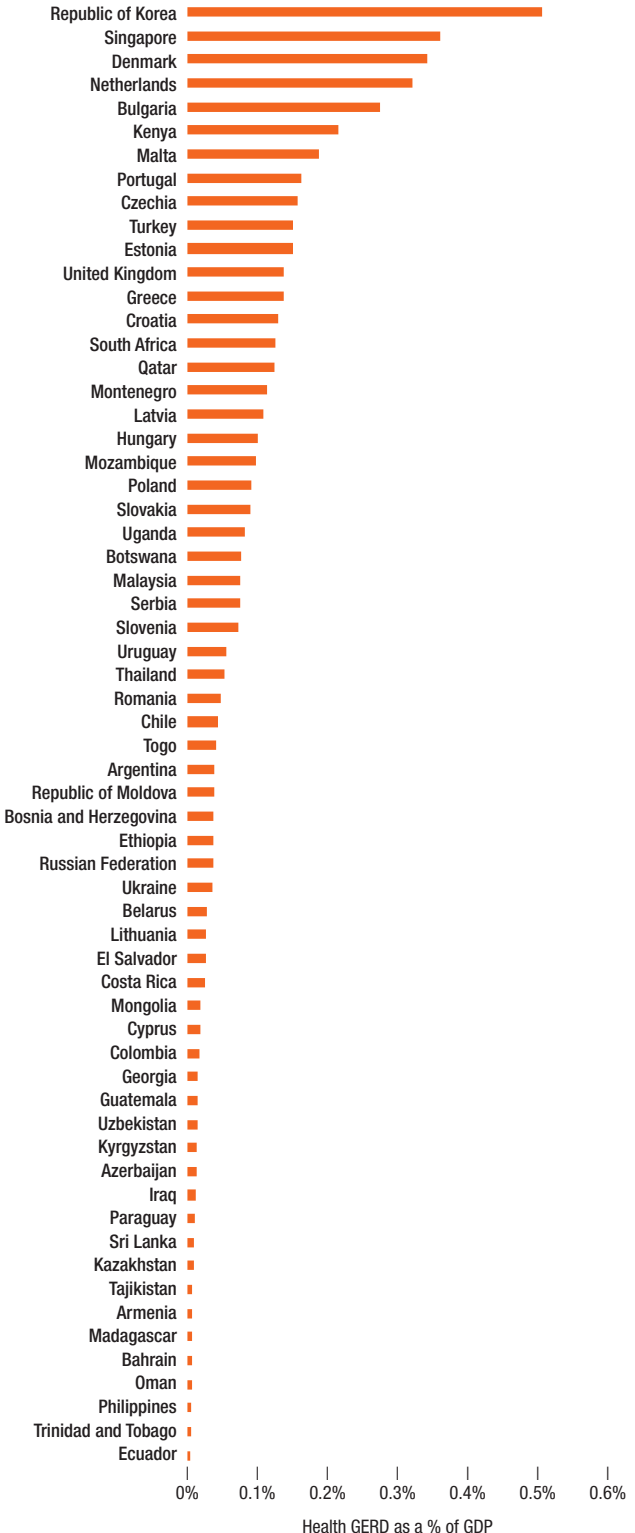


<sup>a</sup> Latest available data.

medical research and basic health sectors as a percentage of gross national income (GNI) (left chart), and as a percentage of total ODA (right chart), across 35 donor countries with available data since 2010. ODA for medical research and basic health sectors as a percentage of GNI ranges from less than 0.01% in some countries to 0.07% in Luxembourg. ODA for medical research and basic health

sectors as a percentage of total ODA ranges from less than 1.0% in some countries to 10.4% in Canada. ODA for medical research and basic health sectors per capita by recipient country are presented in Annex A and Annex B.

**Figure 1.17**  
Gross domestic expenditure on R&D in health and medical sciences (health GERD) as a percentage of GDP, 2010–2014<sup>a</sup>



<sup>a</sup> Latest available data.

Figure 1.17 (27, 70) shows gross domestic expenditure on R&D in the field of health and medical sciences (health GERD) as a percentage of gross domestic product (GDP), across 62 countries with available data since 2010. Values range from 0.01% or less in some countries to 0.51% in the Republic of Korea.

These analyses provide baseline information for benchmarking progress in SDG indicator 3.b.2 and the health-related component of SDG indicator 9.5.1. Other analyses available from the Observatory relevant to these SDG indicators include health GERD as a percentage of total gross domestic expenditure on R&D (total GERD), and number of researchers in the field of health medical sciences per million population and as a percentage of all researchers. In addition, a wide range of detailed data analyses and visualizations are available to monitor and benchmark specific health R&D areas of interest, including those with specific focus on neglected diseases.

**Expansion of the Observatory**

The Observatory will continue to expand the scope, types and sources of data used for the mapping and analysis of health R&D. It will also continue to contribute to existing efforts to improve data quality and classification standards in order to improve information sharing and the knowledge base in this area.

**1.6 Intersectoral action for health**

The SDGs provide the first comprehensive blueprint for human development, within which population health plays a central role as a precondition, outcome and indicator of sustainable development (1). Health contributes to, and is influenced by, the actions taken to achieve all the SDGs and SDG targets. This presents the health sector with new opportunities. By addressing the policies and decision-making processes of other sectors through intersectoral action, it is possible to strengthen both health care and the broader systems for promoting population health and well-being.

Intersectoral action broadly refers to the alignment of intervention strategies and resources between actors from two or more policy sectors in order to achieve complementary objectives (71). Systems for promoting health and well-being are constrained wherever sectoral policies are unaligned, as much of the disease burden worldwide is caused by modifiable health determinants. For example, it is estimated that more than 15% of all deaths are caused by environmental risks, 22% by dietary risks,

3% by low physical activity levels and 3% by maternal and childhood undernutrition (72–73). A large percentage of these deaths can be prevented, and many of the most cost-effective interventions are intersectoral.

During the MDG era, important strides in relation to health determinants were made – with increased coverage of access to improved water sources and decreased HIV/AIDS stigma being two key achievements. The last decade in global health has also seen the WHO Framework Convention on Tobacco Control and the International Health Regulations improving policy alignment between the finance, trade, agriculture, industry and education sectors, among others. In addition, the United Nations Road Safety Collaboration and the Conference of the Parties for Climate Change have reinforced collaboration with the transport and environment sectors. However, all intersectoral efforts also present challenges, requiring constant attention, for example, to improving interdisciplinary understanding, to recognizing and addressing conflicts of interests, to identifying and revamping outdated health legislation, and to generating rewards for health promotion and disease prevention. The health sector will need to demonstrate strong public health leadership in stewarding health in the SDG era (74), while developing sustained, overarching systems supporting health governance.

## Opportunities for action

There are many opportunities for improving health via intersectoral action (75). Foremost among these are actions to reduce harmful exposures which are predominantly

determined by the policies of sectors other than health (Table 1.6). In many cases, co-benefits can be identified that help bring about health benefits while advancing sustainable development targets in other sectors (76). A number of strategies for achieving intersectoral alignment are outlined in this section.

### Linking public health policies and planning, and sustained provision of strategic health advice, to overarching national development plans and processes

Health plans that incorporate a clear orientation towards determinants, rather than an exclusively health care systems focus, will allow for greater intersectoral alignment. Intersectoral approaches to governance – such as the Health in All Policies approach (77) – create supportive systems for providing strategic advice to the range of different agencies implementing country development plans and for co-designing policies (Box 1.3). At the same time, the health sector becomes more open to other sectors' priorities.

### Contributing to the development of population-based policies addressing socioeconomic problems

The WHO Commission on Social Determinants of Health referred to “structural determinants” related to discrimination, the labour market and the welfare state, and to policies addressing poverty, inequalities, social exclusion and early child development. Enhancing social protection yields enormous economic, security, health and equity co-benefit. Potential approaches here include: (a) cash transfers (Box 1.4); (b) maternal and paternal leave; (c) interventions on minimum wages and employment

**Table 1.6**  
Examples of opportunities for leveraging intersectoral action to improve health and achieve multiple other SDG targets

Exposure	Key health outcomes	Intersectoral action: examples of key actions beyond the health sector	SDG targets
Inadequate water, sanitation and hygiene	Diarrhoeal diseases, protein-energy malnutrition, intestinal nematode infections, schistosomiasis, hepatitis A and E, typhoid and poliomyelitis	Actions by water, sanitation, and education sectors to improve management, affordability, and use of appropriate technologies, while empowering communities	1.4; 4.1; 6.1; 6.2; 16.7
Poverty and food insecurity	Under-five child deaths, stunting and wasting	Social welfare cash transfer programmes for better child nutrition and improved use of preventive health services	1.1; 1.2; 1.3; 2.1; 2.2; 10.4
Air pollution	Cardiovascular diseases (CVDs), chronic obstructive pulmonary disease (COPD), respiratory infections and lung cancer	Health-promoting urban design and transport systems resulting in multiple health and environmental co-benefits	7.1; 7.2; 9.1; 11.2; 11.6; 13.1
Substandard and unsafe housing, and unsafe communities	Asthma, CVDs, injuries and violence deaths	Implementation of housing standards and urban design that promote health	1.4; 5.2; 7.1; 7.2; 9.1; 11.1; 11.6; 12.6; 16.1
Hazardous, unsafe and unhealthy work environments	COPD, CVDs, lung cancer, leukaemia, hearing loss, back pain, injuries, depression	Labour sector promotion of occupational standards and workers' rights to protect worker health and safety across different industries (including the informal economy)	8.5; 8.8; 12.6; 13.1; 16.10
Exposure to carcinogens through unsafe chemicals and foods	Cancers, neurological disorders	Sound management of chemicals and food across the food industry, agriculture sector, and different areas of industrial production	6.3; 12.3; 12.4
Unhealthy food consumption and lack of physical activity	Obesity, CVDs, diabetes, cancers and dental caries	Improving product standards, public spaces, and using information and financial incentives, involving the education, agriculture, trade, transport, and urban planning sectors	2.2; 2.3; 4.1; 9.1; 12.6
Inadequate child care and learning environments	Suboptimal cognitive, social and physical development	Specific early child development programmes designed by the health and other sectors, with supportive social policies (for example, paid parental leave, free pre-primary schooling and improvements in female education)	1.3; 4.1; 4.2; 4.5; 5.1; 8.6; 8.7

**Box 1.3**  
**Instruments of overarching intersectoral work and governance for health and health equity (80–83)**

**Finnish developments for equity and well-being 2015**

To take into account health, well-being and equity in all sectors in Finland, the Ministry of Social Affairs and Health, with help from the National Institute for Health and Welfare, is leading a process of voluntary inter-ministerial collaboration around health equity and well-being. The collaboration initially targets a limited number of key government programmes being implemented by different ministries (including the digitalization of public services; energy and climate strategies; reform of vocational upper secondary education; and the “youth guarantee” to tackle unemployment among young people). Equity is seen by many as an intersectoral goal, rather than being the domain of the health sector alone.

**Starting South Australia’s Health in All Policies 2007–2017**

The South Australian Health in All Policies approach uses a model specific to the government’s organizational structure to address the government’s overarching strategic objectives. By incorporating a focus on population health into the policy development process of different agencies, the government is able to better address the social determinants of health in a systematic manner. The successful adoption and implementation of Health in All Policies in South Australia has been influenced by the following four factors: a high-level mandate from central government, an overarching policy framework which can accommodate health lens application to diverse areas, a commitment to work collaboratively across agencies, and a strong evaluation process.

**Estonian National Health Plan 2009–2020 Core Action Areas**

- Social cohesion and equal opportunities
- Safe and healthy development of children and adolescents
- Living, working and learning environment
- Healthy lifestyle
- Development of the health care system

**Box 1.4**  
**Socioeconomic policies (84–87)**

**Cash transfers in Zambia**

The Kalomo cash transfer, launched in 2004 by the Ministry of Community Development originally covered 1000 households in Kalomo District. A monthly grant was provided to households considered destitute. Those benefiting were the most vulnerable (70% impacted by HIV/AIDS; orphanhood among children was 30% (national average 17%); 55% of households heads were aged 65 or over). By 2007, the population enrolled in the programme had increased their food consumption and reported reduced illness (Figure 1.18). Owing to the positive impacts recorded, by 2014, the number of beneficiaries had risen to 48 000 households.

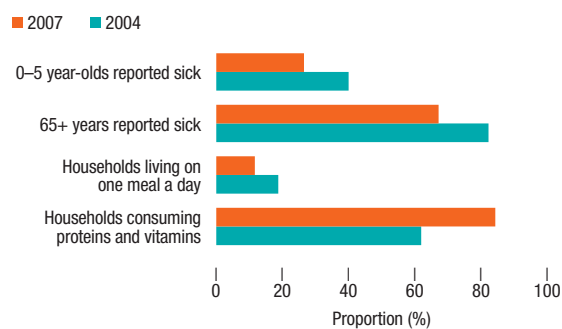
**Mexico Prospera (previously, Oportunidades)**

This conditional cash transfer programme was implemented in 1997 to ameliorate extreme poverty. *Prospera* has systematically demonstrated direct beneficial effects on health and nutrition outcomes, and on important social determinants such as education. One of the main indicators used to monitor its performance is the percentage of people living in extreme poverty. There is evidence indicating that *Prospera* has contributed to the gradual reduction in extreme poverty.

**Chile “grows with you”**

*Chile Crece Contigo* (Chile Grows with You) is a social protection policy for children 0–4 years of age, based on a system of benefits, interventions and social services. It includes home visits, education groups on parenting skills and child development, child care, health care, counselling and referral services. The poorest households have free access to nurseries and pre-schools, as do vulnerable families and those with special needs.

**Figure 1.18**  
**Pre- and post-analysis of Kalomo cash transfer, Zambia, 2004–2007**



conditions for vulnerable groups (such as workers in the informal economy and children); and (d) affordable housing. Such policies address socioeconomic and health inequalities, thus contributing to SDG 1 on poverty, SDG 2 on hunger, SDG 4 on education, SDG 5 on gender equality and SDG 10 on inequality, while also contributing to the sustainability of health care systems, with direct relevance to SDG 3. For example, it has been estimated that each additional month of paid maternity leave in LMIC is associated with 7.9 fewer infant deaths per 1000 live births (78), while integrated social and medical services, tailored to disadvantaged families and delivered by nurses in homes, result in significant developmental benefits (79).

**Leveraging world production, consumption and trade systems, and global phenomena such as migration and climate change**

Economic and legal levers such as tax, regulation and laws have been used to change the production and trade

of consumables such as tobacco, alcohol, fat and sugars to address associated health risks such as smoking, poor nutrition, interpersonal violence and obesity. Regulatory levers are also effective in regulating products used in construction (for example, asbestos or lead paint). A 2014 World Health Assembly resolution on public health impacts of exposure to mercury and mercury compounds (88), aims to protect human health and the environment from the adverse effects of mercury, and encourages ministries of health to cooperate with related ministries including those for the environment, labour, industry and agriculture. In other areas, global health security can be improved through national intersectoral committees constituted in accordance with the International Health Regulations (2005), while the issue of global migration is being given an increasing public health focus, broadening from codes of practice on international health worker recruitment to encompass refugee and economic migrant populations (89).



## Creating health-promoting physical, economic and social environments

Placing a strong focus on creating healthy environments – as, for example, in the Healthy Cities initiative (90) – can bring enormous health gains across disease types, and can be achieved through intersectoral action and integrated policies involving national and local governments. Policies for environmental services (including safe water, sanitation facilities and waste removal), integrated safe and active transportation, adequate housing, clean air, space for exercise, healthy and safe schools and workplaces, affordable nutritious and healthy food, and control of tobacco, alcohol, fat and sugar consumption are all important in addressing communicable and noncommunicable diseases, and promoting maternal and child health.

## Roles of the health sector

All health sector roles – whether lead agency, negotiator or partner – require strong public health leadership skills. Health authorities may: (a) initiate actions; (b) join up to initiatives developed by the head of government or new integrated government entities (such as initiatives on migration or equity); (c) partner with authorities outside health that are leading on an issue (such as the prevention of road deaths); or (d) ensure linkages between national authorities and local government to support community action (91). Whole-of-government approaches – such as Health in All Policies – supported by tools such as the Framework for Country Action Across Sectors (92) and training resources (93) are practical means to strengthen all spheres of intersectoral work. Multidisciplinary technical knowledge in local settings is valuable and requires development through intersectoral partnerships. Practice-oriented evidence tools are increasingly available in a wide range of areas, including children's environmental health, NCDs, nutrition, climate change, WASH in health facilities, chemical risk assessments and food safety.<sup>1</sup> National policy-makers can capitalize on the range of international custodian and partner roles to be played by WHO in relation to 27 SDG targets across nine SDGs (SDGs 1–3, 5–7, 11, 13, 16 and 17).

Influencing the agendas, policies and laws of other sectors requires: (a) the sharing of health-based targets with the other sectors; (b) understanding their policy imperatives; (c) using prospective evaluation techniques (such as human-impact assessments) to design policies; (d) developing guidance on the health implications of non-health-sector policies; (e) assessing the costs of such policies and decisions, and integrating strategies; and (f) tracking the health impacts of such policies and ensuring joint accountability through routine national public health reports. At the core of such efforts, health-sector staff dedicated to, and valued for, their intersectoral work at the policy level will be essential, along with efforts to engage with the higher levels of central leadership (77).

## Other policy sectors as major health players

Central government at the highest level plays a key role in elevating population health as a key outcome of development. Building a whole-of-government commitment to population health can only be spearheaded if the head of government, cabinet and/or parliament, as well as the administrative leadership of different sectors, are all fully engaged. Such engagement can result in an incentivized environment for joint work – and the valuing of joint problem solving and integrated policy design. High-level policy processes can be facilitated and responsibilities embedded into government strategies, goals and targets across policy sectors.

The health sector can be provided with the policy space needed to engage other sectors of the government, with the involvement of such sectors depending upon the signals given regarding national high-level priorities, and the understanding that considering health aspects in all policy offers significant co-benefits. Ultimately, creating strong alliances and partnerships that recognize mutual interests and share targets will be essential for success.

<sup>1</sup> For a range of available resources in these areas see: [http://www.who.int/ceh/capacity/training\\_modules/en/](http://www.who.int/ceh/capacity/training_modules/en/); <http://www.who.int/nmh/action-plan-tools/en/>; <http://www.who.int/elena/en/>; <http://www.who.int/globalchange/mediacentre/news/country-profiles/en/>; <https://www.washinhcf.org/home/>; <http://www.who.int/ipcs/methods/en/>

## References

1. Transforming our world: the 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015 [without reference to a Main Committee (A/70/L.1)]. A/RES/70/1. United Nations General Assembly, Seventieth session, agenda items 15 and 116 (<https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>, accessed 13 March 2017).
2. Our common future. Report of the United Nations World Commission on Environment and Development. Geneva: United Nations World Commission on Environment and Development ([www.un-documents.net/our-common-future.pdf](http://www.un-documents.net/our-common-future.pdf), accessed 13 March 2017).
3. Measurement of healthy life expectancy and wellbeing. Report of a technical meeting, Geneva, Switzerland, 10-11 December 2012. Geneva: World Health Organization ([http://www.who.int/healthinfo/SAGE\\_MeetingReport\\_Dec2012.pdf?ua=1](http://www.who.int/healthinfo/SAGE_MeetingReport_Dec2012.pdf?ua=1), accessed 13 March 2017).
4. WHO Framework Convention on Tobacco Control. Geneva: World Health Organization; 2003, updated reprint 2004, 2005 (<http://apps.who.int/iris/bitstream/10665/42811/1/9241591013.pdf?ua=1>, accessed 13 March 2017).
5. Addis Ababa Action Agenda of the Third International Conference on Financing for Development. Addis Ababa, Ethiopia, 13-16 July 2015. New York: United Nations; 2015 ([http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA\\_Outcome.pdf](http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf), accessed 13 March 2017).
6. Transforming our world: the 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015 [without reference to a Main Committee (A/70/L.1)]. A/RES/70/1. United Nations General Assembly, Seventieth session, agenda items 15 and 116; paragraphs 72-91 ([http://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E), accessed 3 April 2017).
7. Based on data reported to the WHO Mortality Database ([http://www.who.int/healthinfo/mortality\\_data/en/](http://www.who.int/healthinfo/mortality_data/en/)) as of 12 October 2016.
8. Global Health Estimates 2015: Deaths by cause, age, sex, by country and by region, 2000-2015. Geneva: World Health Organization; 2016 ([http://www.who.int/healthinfo/global\\_burden\\_disease/estimates/en/index1.html](http://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html), accessed 22 March 2017).
9. WHO methods and data sources for global causes of death 2000-2011. Global Health Estimates Technical Paper WHO/HIS/HSI/GHE/2013.3. Geneva: World Health Organization; 2013 ([http://www.who.int/healthinfo/statistics/GHE\\_TR2013-3\\_COD\\_MethodsFinal.pdf](http://www.who.int/healthinfo/statistics/GHE_TR2013-3_COD_MethodsFinal.pdf), accessed 3 April 2017).
10. Adapted from: Kienny MP, Bekedam H, Dovlo D, Fitzgerald J, Habicht J, Harrison G, et al. Strengthening health systems for universal health coverage and sustainable development. Bull World Health Organ. 2017 [forthcoming].
11. International Health Partnership for UHC 2030 [website]. See: <https://www.internationalhealthpartnership.net/en/>
12. Global strategy on human resources for health: Workforce 2030. Geneva: World Health Organization; 2016 (see: [http://www.who.int/hrh/resources/pub\\_globstrathrh-2030/en/](http://www.who.int/hrh/resources/pub_globstrathrh-2030/en/)).
13. The global strategy for women's, children's and adolescents' health (2016-2030). Survive, thrive, transform. Every Woman Every Child; 2015 (see: <http://www.who.int/life-course/partners/global-strategy/en/>).
14. Global health sector strategies for HIV, viral hepatitis, STIs, 2016-2021. Geneva: World Health Organization (see: <http://www.who.int/hiv/strategy2016-2021/en/>).
15. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. Geneva: World Health Organization; 2013 (see: [http://www.who.int/nmh/events/ncd\\_action\\_plan/en/](http://www.who.int/nmh/events/ncd_action_plan/en/)).
16. Health Data Collaborative. Data for health and sustainable development [website]. See: <https://www.healthdatacollaborative.org/>
17. Universal Health Coverage Data Portal [online database]. Geneva: World Health Organization (<http://apps.who.int/gho/cabinet/uhc.jsp>).
18. Universal health coverage: financial protection [website]. Copenhagen: WHO Regional Office for Europe (<http://www.euro.who.int/en/health-topics/Health-systems/health-systems-financing/publications/clusters/universal-health-coverage-financial-protection>).
19. Toward universal health coverage and equity in Latin America and the Caribbean. Evidence from selected countries. Dmytraczenko T, Almeida G, editors. Washington (DC): World Bank; 2015 (see: [http://www.paho.org/hq/index.php?option=com\\_content&view=article&id=11065%3A2015-universal-health-coverage-latin-america-caribbean&catid=3316%3Apublications&Itemid=3562&lang=en](http://www.paho.org/hq/index.php?option=com_content&view=article&id=11065%3A2015-universal-health-coverage-latin-america-caribbean&catid=3316%3Apublications&Itemid=3562&lang=en)).
20. WHO Eastern Mediterranean Region Framework for health information systems and core indicators for monitoring the health situation and health system performance. Cairo: WHO Regional Office for the Eastern Mediterranean; 2016 (WHO-EM/HST/242/E; [http://applications.emro.who.int/dsaf/EMROPUB\\_2016\\_EN\\_19169.pdf?ua=1](http://applications.emro.who.int/dsaf/EMROPUB_2016_EN_19169.pdf?ua=1), accessed 7 April 2017).
21. Universal health coverage. Moving towards better health [website]. New Delhi: WHO Regional Office for South-East Asia (<http://apps.searo.who.int/uhc>).
22. Millennium Development Goal 8. Taking stock of the Global Partnership for Development. MDG Gap Task Force Report 2015. New York (NY): United Nations; 2015 ([www.un.org/en/development/desa/policy/mdg\\_gap/mdg\\_gap2015/2015GAP\\_FULLREPORT\\_EN.pdf](http://www.un.org/en/development/desa/policy/mdg_gap/mdg_gap2015/2015GAP_FULLREPORT_EN.pdf), accessed 7 April 2017).
23. WHO Global Health Workforce Statistics [online database]. Health workforce. Geneva: World Health Organization (<http://who.int/hrh/statistics/hwfstats/en/>).
24. Health Equity Monitor [online database]. Global Health Observatory (GHO) data. Geneva: World Health Organization ([http://www.who.int/gho/health\\_equity/en/](http://www.who.int/gho/health_equity/en/)).
25. Sustainable health financing, universal coverage and social health insurance. Resolution WHA58.33. In: Fifty-eighth World Health Assembly, Geneva, 16-25 May 2005. Resolutions and decisions, annex. Geneva: World Health Organization; 2005 (WHA58/2005/REC/1; <http://apps.who.int/medicinedocs/documents/s21475en/s21475en.pdf>, accessed 7 April 2017).
26. OECD/WHO/Eurostat. A System of Health Accounts: 2011 Edition, Paris: OECD Publishing; 2011 ([http://www.oecd-ilibrary.org/social-issues-migration-health/a-system-of-health-accounts/classification-of-health-care-financing-schemes-icha-hf\\_9789264116016-9-en](http://www.oecd-ilibrary.org/social-issues-migration-health/a-system-of-health-accounts/classification-of-health-care-financing-schemes-icha-hf_9789264116016-9-en), accessed 7 April 2017).
27. WHO Global Health Expenditure Database [online database]. Geneva: World Health Organization (<http://apps.who.int/nha/database/Select/Indicators/en>, accessed 20 March 2017). Global and regional aggregates are unweighted averages. Income classification is based on the World Bank analytical income of economies (July 2016), based on the 2015 Atlas gross national income per capita estimates.

28. World Development Indicators [online database]. Washington (DC): World Bank (<http://data.worldbank.org/data-catalog/world-development-indicators>, accessed 20 March 2017).
29. State of inequality: reproductive, maternal, newborn and child health. Geneva: World Health Organization; 2015 ([http://apps.who.int/iris/bitstream/10665/164590/1/9789241564908\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/164590/1/9789241564908_eng.pdf?ua=1), accessed 8 April 2017).
30. State of inequality: childhood immunization. Geneva: World Health Organization; 2016 (<http://apps.who.int/iris/bitstream/10665/252541/1/9789241511735-eng.pdf?ua=1>, accessed 8 April 2017).
31. Are efforts to meet the MDGs reducing health gaps between countries? In: World Health Statistics 2013. Part II. Highlighted topics. Geneva: World Health Organization; 2013 (see: [http://www.who.int/gho/publications/world\\_health\\_statistics/2013/en/](http://www.who.int/gho/publications/world_health_statistics/2013/en/), accessed 8 April 2017).
32. Humanity divided: Confronting inequality in developing countries. New York: UNDP; 2014 (see: <http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/humanity-divided--confronting-inequality-in-developing-countries.html>, accessed 8 April 2017); and: Income inequality. The gap between rich and poor. Paris: OECD; 2015 (see: <http://www.oecd.org/social/income-inequality-9789264246010-en.htm>, accessed 8 April 2017).
33. Gwatkin DR. Trends in health inequalities in developing countries. *Lancet Glob Health*. 2017;5(4):e371-2 ([http://thelancet.com/journals/langlo/article/PIIS2214-109X\(17\)30080-3/fulltext#back-bib8](http://thelancet.com/journals/langlo/article/PIIS2214-109X(17)30080-3/fulltext#back-bib8), accessed 8 April 2017).
34. Victora CG, Barros AJD, França GVA, da Silva ICM, Carvajal-Velez L, Amouzou A. The contribution of poor and rural populations to national trends in reproductive, maternal, newborn, and child health coverage: analyses of cross-sectional surveys from 64 countries. *Lancet Glob Health*. 2017;5(4):e402-7 ([http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X\(17\)30077-3.pdf](http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(17)30077-3.pdf), accessed 8 April 2017).
35. Paciorek CJ, Stevens GA, Finucane MM, Ezzati M and on behalf of the Nutrition Impact Model Study Group (Child Growth). Children's height and weight in rural and urban populations in low-income and middle-income countries: a systematic analysis of population-representative data. *Lancet Glob Health*. 2013;1(5):e300-9 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4547325/>, accessed 8 April 2017).
36. Case A, Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proc Natl Acad Sci USA*. 2015;112(49):15078-83 (doi:10.1073/pnas.1518393112).
37. Chetty R, Stepner M, Abraham S, Lin S, Scuderi B, Turner N et al. The association between income and life expectancy in the United States, 2001-2014. *JAMA*. 2016;315(16):1750-66 (doi:10.1001/jama.2016.4226).
38. Wang H, Schumacher AE, Levitz CE, Mokdad AH, Murray CJL. Left behind: widening disparities for males and females in US county life expectancy, 1985-2010. *Popul Health Metr*. 2013;11:8.
39. Newton JN, Briggs ADM, Murray CJL, Dicker D, Foreman KJ, Wang H et al. Changes in health in England, with analysis by English regions and areas of deprivation, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015;386(10010):2257-74.
40. Di Cesare M, Khang Y-H, Asaria P, Blakely T, Cowan MJ, Farzadfar F et al. Inequalities in non-communicable diseases and effective responses. *Lancet*. 2013;381(9866):585-597 ([http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)61851-0/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)61851-0/fulltext), accessed 8 April 2017); and: Sommer I, Griebler U, Mahlknecht P, Thaler K, Bouskill K, Gartlehner G et al. Socioeconomic inequalities in non-communicable diseases and their risk factors: an overview of systematic reviews. *BMC Public Health*. 2015;15:914 (<http://bmcpubhealth.biomedcentral.com/articles/10.1186/s12889-015-2227-y>, accessed 8 April 2017); and: Allen L, Williams J, Townsend N, Mikkelsen B, Roberts N, Foster C et al. Socioeconomic status and non-communicable disease behavioural risk factors in low-income and lower-middle-income countries: a systematic review. *Lancet Glob Health*. 2017;5(3):e277-89 ([http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(17\)30058-X/fulltext](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(17)30058-X/fulltext), accessed 8 April 2017).
41. Adapted from: Handbook on health inequality monitoring: with a special focus on low- and middle-income countries. Geneva: World Health Organization; 2013 ([http://apps.who.int/iris/bitstream/10665/85345/1/9789241548632\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/85345/1/9789241548632_eng.pdf?ua=1), accessed 5 April 2017).
42. The DHS Program [website]. Rockville (MD): United States Agency for International Development (<http://dhsprogram.com>).
43. Statistics and monitoring: Multiple Indicator Cluster Survey (MICS) [website]. New York (NY): United Nations Children's Fund ([http://www.unicef.org/statistics/index\\_24302.html](http://www.unicef.org/statistics/index_24302.html)).
44. Human rights indicators: A guide to measurement and implementation. New York (NY) and Geneva: United Nations Office of the High Commissioner for Human Rights (see: <http://www.ohchr.org/EN/Issues/Indicators/Pages/documents.aspx>, accessed 8 April 2017).
45. Hosseinpoor AR, Bergen N, Schlottheuber A, Victora C, Boerma T, Barros AJD. Data Resource Profile: WHO Health Equity Monitor (HEM). *International J Epidemiol*. 2016;45(5):1404-5e (<https://academic.oup.com/ije/article/45/5/1404/2450924/Data-Resource-Profile-WHO-Health-Equity-Monitor>, accessed 8 April 2017).
46. Country Planning Cycle Database. A World Health Organization Resource [online database]. Geneva: World Health Organization (<http://www.nationalplanningcycles.org/>).
47. Strategizing national health in the 21st century: a handbook. Geneva: World Health Organization; 2016 (see: <http://www.who.int/healthsystems/publications/nhsp-handbook/en/>, accessed 8 April 2017).
48. Gwatkin DR, Ergo A. Universal health coverage: friend or foe of health equity? *Lancet*. 2011;377(9784):2160-1 (<http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2810%2962058-2/fulltext>, accessed 8 April 2017).
49. The Innov8 approach for reviewing national health programmes to leave no one behind. Technical handbook. Geneva: World Health Organization; 2016 (see: <http://www.who.int/life-course/partners/innov8/innov8-technical-handbook/en/>, accessed 8 April 2017).
50. Thomson S, Foubister T, Figueras J, Kutzin J, Permanand G, Bryndová L. Addressing financial sustainability in health systems. Copenhagen: WHO Regional Office for Europe; 2009 ([http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0005/64949/E93058.pdf](http://www.euro.who.int/__data/assets/pdf_file/0005/64949/E93058.pdf), accessed 15 March 2017).
51. Tandon A. Financial sustainability challenges in transitioning from external sources of financing [meeting presentation]. Washington (DC): World Bank. Presented at: UHC2030 Working Group meeting on sustainability, transition from aid, and health system strengthening. April, 2017 ([https://www.internationalhealthpartnership.net/fileadmin/uploads/ihp/Documents/About\\_IHP\\_working\\_groups/Transition\\_working\\_group\\_docs/ATandon\\_TransitionSustainability.pdf](https://www.internationalhealthpartnership.net/fileadmin/uploads/ihp/Documents/About_IHP_working_groups/Transition_working_group_docs/ATandon_TransitionSustainability.pdf), accessed 23 April 2017).
52. Kutzin J, Sparkes SP. Health systems strengthening, universal health coverage, health security and resilience. *Bull World Health Organ*. 2016;94(1):2 (<http://www.who.int/bulletin/volumes/94/1/15-165050.pdf>, accessed 15 March 2017).

53. Kutzin J, Yip W, Cashin C. Alternative financing strategies for universal health coverage. *World Scientific Handbook of Global Health Economics and Public Policy*. World Scientific; 2016:267–309 ([http://www.worldscientific.com/doi/pdf/10.1142/9789813140493\\_0005](http://www.worldscientific.com/doi/pdf/10.1142/9789813140493_0005), accessed 15 March 2017).
54. Kutzin J. Anything goes on the path to universal health coverage? *Bull World Health Organ*. 2012;90(11):867–8 (<http://www.who.int/bulletin/volumes/90/11/12-113654.pdf>, accessed 15 March 2017).
55. Public financing for health in Africa: from Abuja to the SDGs. Geneva: World Health Organization; 2016 (<http://apps.who.int/iris/bitstream/10665/249527/1/WHO-HIS-HGF-Tech.Report-16.2-eng.pdf?ua=1>, accessed 15 March 2017).
56. Jowett M, Kutzin J. Raising revenues for health in support of UHC: strategic issues for policy makers. Geneva: World Health Organization; 2015 ([http://apps.who.int/iris/bitstream/10665/192280/1/WHO\\_HIS\\_HGF\\_PolicyBrief\\_15.1\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/192280/1/WHO_HIS_HGF_PolicyBrief_15.1_eng.pdf?ua=1), accessed 15 March 2017).
57. Fryatt R, Mills A. Taskforce on Innovative International Financing for Health Systems: showing the way forward. *Bull World Health Organ*. 2010;88(6):476–7 (<http://www.who.int/bulletin/volumes/88/6/09-075507/en/>, accessed 15 March 2017).
58. Buckley GJ, Lange JE, Peterson EA, editors. Investing in global health systems: sustaining gains, transforming lives. Washington (DC): National Academies Press; 2014.
59. Jowett M, Brunal MTP, Flores G, Cylus J. Spending targets for health: no magic number. Geneva: World Health Organization; 2016 (<http://apps.who.int/iris/bitstream/10665/250048/1/WHO-HIS-HGF-HFWorkingPaper-16.1-eng.pdf?ua=1>, accessed 15 March 2017).
60. Fuchs VR. What every philosopher should know about health economics. *Proc Am Philos Soc*. 1996; 140(2):186–96 ([http://www.worldscientific.com/doi/suppl/10.1142/8167/suppl\\_file/8167\\_p155\\_free.pdf](http://www.worldscientific.com/doi/suppl/10.1142/8167/suppl_file/8167_p155_free.pdf), accessed 15 March 2017).
61. Fragmentation in pooling arrangements. Technical Briefing Series – Brief No 5. Geneva: World Health Organization; 2010 (<http://www.who.int/healthsystems/topics/financing/healthreport/FragmentationTBNo5.pdf?ua=1>, accessed 15 March 2017).
62. Kutzin J, Shishkin S, Bryndová L, Schneider P, Hroboň P. Reforms in the pooling of funds. In: Kutzin J, Cashin C, Jakab M, editors. Implementing health financing reform. Lessons from countries in transition. Copenhagen: World Health Organization, on behalf of the European Observatory on Health Systems and Policies; 2010: 119–53 ([http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0014/120164/E94240.pdf](http://www.euro.who.int/__data/assets/pdf_file/0014/120164/E94240.pdf), accessed 15 March 2017).
63. Londoño J-L, Frenk J. Structured pluralism: towards an innovative model for health system reform in Latin America. *Health Policy*. 1997;41(1):1–36.
64. Frenk J. Comprehensive policy analysis for health system reform. *Health Policy*. 1995;32(1–3):257–77.
65. Addis Ababa Action Agenda of the Third International Conference on Financing for Development. Addis Ababa, Ethiopia, 13–16 July 2015. New York: United Nations; 2015 ([http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA\\_Outcome.pdf](http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf), accessed 13 March 2017).
66. Global Observatory on Health R&D [online database]. Geneva: World Health Organization (<http://www.who.int/research-observatory/en/>).
67. Röttingen J-A, Regmi S, Eide M, Young AJ, Viergever RF, Årdal C et al. Mapping of available health research and development data: what's there, what's missing, and what role is there for a global observatory. *Lancet*. 2013;382(9900):1286–307 (summary: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)61046-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)61046-6/fulltext), accessed 8 April 2017).
68. Kieny MP, Viergever RF, Adam T, Boerma T, Röttingen J-A. Global platform to inform investments for health R&D. *Lancet*. 2016;387(10024):1157 ([http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)00705-4/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)00705-4/fulltext), accessed 8 April 2017).
69. Organisation for Economic Co-operation and Development (OECD) database (<http://stats.oecd.org/>, accessed 15 December 2016).
70. Health GERD data are from the United Nations Educational, Scientific and Cultural Organization (UNESCO) as of 15 December 2016. Data on GDP are from the WHO Global Health Expenditure Database (see reference 27).
71. Solar O, Valentine N, Rice M, Albrecht D. Moving forward to equity in health. What kind of intersectoral action is needed? An approach to an intersectoral typology. Partnership and Intersectoral Action [Conference Working Document]. Geneva: World Health Organization. Presented at: 7th Global Conference on Health Promotion, Promoting Health and Development: Closing the Implementation Gap. Nairobi, Kenya, 26–30 October 2009. (<http://pediatricsociale.fondationdrjulien.org/wp-content/uploads/2015/08/8-Solar-et-al.-2009.pdf>, accessed 5 May 2017).
72. Prüss-Ustün et al. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks. Geneva: World Health Organization; 2016 ([http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196_eng.pdf?ua=1), accessed 28 April 2016).
73. IHME Global Health Data Exchange [online database]. Seattle: Institute for Health Metrics and Evaluation (<http://ghdx.healthdata.org/gbd-results-tool>, accessed 21 April 2017).
74. Travis P, Egger D, Davies P, Mechbal A. Towards better stewardship: concepts and critical issues. Geneva: World Health Organization; 2002 (WHO/EIP/DP/02.48; [www.who.int/healthinfo/paper48.pdf](http://www.who.int/healthinfo/paper48.pdf), accessed 9 April 2017); and: Jakubowski E, Donaldson L, Martin-Moreno JM. Developing public health leadership. In: Facets of public health in Europe. Rechel B, McKee M, editors. Brussels: European Observatory on Health Systems and Policies Series; 2014:267–83.
75. Intersectoral action on health. A path for policy-makers to implement effective and sustainable action on health. Kobe: World Health Organization, The WHO Centre for Health Development; 2011 ([http://www.who.int/kobe\\_centre/publications/ISA-booklet\\_WKC-AUG2011.pdf](http://www.who.int/kobe_centre/publications/ISA-booklet_WKC-AUG2011.pdf), accessed 9 April 2017).
76. Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development. Geneva: World Health Organization; 2016 (<http://www.who.int/entity/healthpromotion/conferences/9gchp/shanghai-declaration.pdf?ua=1>, accessed 21 April 2017).
77. Adelaide Statement II. Implementing the Sustainable Development Agenda through good governance for health and wellbeing: building on the experience of Health in All Policies. Outcome Statement from the 2017 International Conference on Health in All Policies: progressing the Sustainable Development Goals, Adelaide, Australia, 2017. Geneva and Adelaide: World Health Organization and Government of South Australia; 2017 ([http://www.who.int/social\\_determinants/SDH-adelaide-statement-2017.pdf?ua=1](http://www.who.int/social_determinants/SDH-adelaide-statement-2017.pdf?ua=1), accessed 27 April 2017).
78. Nandi A, Hajizadeh M, Harper S, Koski A, Strumpf EC, Heymann J. Increased duration of paid maternity leave lowers infant mortality in low- and middle-income countries: a quasi-experimental study. *PLoS Med*. 2016;13(3):e1001985 (doi:10.1371/journal.pmed.1001985).

79. Howard KS, Brooks-Gunn J. The role of home-visiting programs in preventing child abuse and neglect. *The Future of Children*; 2009;19(2):119–46.
80. Rotko T, et al. How to take into account health, wellbeing and equity in all sectors in Finland. In: *Progressing the Sustainable Development Goals through Health in All Policies: Case studies from around the world*, editors: Vivian Lin, Ilona Kickbusch. Geneva and Adelaide: World Health Organization and Government of South Australia; 2017 (forthcoming).
81. Williams C, et al. Health in All Policies in South Australia: lessons from 10 years of practice. In: *Progressing the Sustainable Development Goals through Health in All Policies: Case studies from around the world*, editors: Vivian Lin, Ilona Kickbusch. Geneva and Adelaide: World Health Organization and Government of South Australia; 2017 (forthcoming).
82. National Health Plan 2009–2020. Tallinn: Government of Estonia; 2008 (amended 2012) ([https://www.sm.ee/sites/default/files/content-editors/eesmargid\\_ja\\_tegevused/Tervis/Aruanded/rta\\_2009-2020\\_2012\\_eng.pdf](https://www.sm.ee/sites/default/files/content-editors/eesmargid_ja_tegevused/Tervis/Aruanded/rta_2009-2020_2012_eng.pdf), accessed 27 April 2017).
83. National Health Plan: better life for longer. Tallinn: Government of Estonia ([http://www.nationalplanningcycles.org/sites/default/files/country\\_docs/Estonia/nhp\\_estonia.pdf](http://www.nationalplanningcycles.org/sites/default/files/country_docs/Estonia/nhp_estonia.pdf), accessed 27 April 2017).
84. Social protection: shared interests in vulnerability reduction and development. Social Determinants of Health Sectoral Briefing Series. Geneva: World Health Organization; 2012 ([http://apps.who.int/iris/bitstream/10665/44876/1/9789241503655\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/44876/1/9789241503655_eng.pdf), accessed 9 April 2017).
85. Innovative practices for intersectoral action on health: a case study of four programmes for social equity. Las Condes, Santiago: Chile: Social Determinants of Health Initiative. From: The Database on Intersectoral Action for Health Equity (ISACS) [online database]. Geneva: World Health Organization (<https://extranet.who.int/isacs/case/1087>, accessed 9 April 2017); and: Richter LM, Daelmans B, Lombardi J, Heymann J, Lopez Boo F, Behrman JR et al. Investing in the foundation of sustainable development: pathways to scale up for early childhood development. *Lancet*; 2017;389(10064):103–18.
86. A decade towards better health in Chile. *Bull World Health Organ*. Special theme: Social determinants of health. 2011;89(10):701–76.
87. Martinez Valle, A. The Mexican experience in monitoring and evaluation of public policies addressing social determinants of health. *Glob Health Action*. Special issue: Monitoring health determinants with an equity focus. 2016;9 (Doi: 10.3402/gha.v9.29030).
88. Public health impacts of exposure to mercury and mercury compounds: the role of WHO and ministries of public health in the implementation of the Minamata Convention. WHA67.11. In: *Sixty-seventh World Health Assembly, Geneva, 19–24 May 2014. Resolutions and decisions, annexes*. Geneva: World Health Organization; 2014:21–23 (WHA67/2014/REC/1; [http://apps.who.int/gb/ebwha/pdf\\_files/WHA67-REC1/A67\\_2014\\_REC1-en.pdf#page=1](http://apps.who.int/gb/ebwha/pdf_files/WHA67-REC1/A67_2014_REC1-en.pdf#page=1), accessed 9 April 2017).
89. The 2nd Global Consultation on Migrant Health: Resetting the agenda. Geneva: World Health Organization; 2017 (see: <http://www.who.int/migrants/news-events/en/#global-consultationMH>, accessed 9 April 2017).
90. Shanghai Consensus on Healthy Cities 2016. Geneva: World Health Organization; 2016 (see: <http://www.who.int/healthpromotion/conferences/9gchp/healthy-city-pledge/en/>, accessed 9 April 2017).
91. Practising a health in all policies approach – lessons for universal health coverage and health equity: a policy briefing for ministries of health based on experiences from Africa, South-East Asia and the Western Pacific. Geneva: World Health Organization; 2013 ([http://apps.who.int/iris/bitstream/10665/105529/1/9789241506632\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/105529/1/9789241506632_eng.pdf), accessed 9 April 2017).
92. First draft of the framework for country action across sectors for health and health equity. Geneva: World Health Organization; 2015 (<http://www.who.int/nmh/events/WHO-discussion-paper2.pdf?ua=1>, accessed 9 April 2017).
93. Health in all policies training manual. Geneva: World Health Organization; 2015 (see: [http://www.who.int/social\\_determinants/publications/health-policies-manual/en/](http://www.who.int/social_determinants/publications/health-policies-manual/en/), accessed 9 April 2017).