Estimation of Primary Health Care expenditure

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WHO Expenditure Tracking / Health Accounts team

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Introduction / Background

The 1978 Alma Ata Declaration that Primary Health Care (PHC) was touted as an integral step to achieving health for all (WHO, 1978). More recently, the 2008 World Health Report, WHA following resolutions, and the Sustainable Development Goals (SDGs) re-emphasized the importance of PHC in recognition that regardless of a country's income status, most of health conditions can be addressed via primary care interventions. PHC is recognized as the foundation of any health system and as the most effective, efficient, and equitable approach to delivering essential health services to the majority of the population for the lowest cost.

In that sense, increasing investment into PHC (especially from domestic sources to improve the sustainability of financing) is a mounting priority. However, measuring PHC expenditure in a comparative and standard manner is a first step for understanding why some countries are doing better than others and where extra efforts can be made to gain better performance.

Since 1999, the WHO Global Health Expenditure Database (GHED) reports health expenditure data and indicators by country, following the System of Health Accounts (SHA 2011) global framework. It is updated annually with data collected from Member States and since 2018, it reports the use of resources by type of services [the SHA 2011 health care functions classification (HC)] and an estimation of Primary Health Care expenditures, using an operational definition of PHC expenditure which was defined following a global consultation process on how SHA 2011 could be used to monitor PHC [1]. This operational definition of PHC expenditure aggregates several categories of functions in SHA 2011: general and dental outpatient curative care, home-based curative care, outpatient and home-based long-term health care, preventive care, part of medical goods provided outside health care services and part of health system administration and governance costs.

The estimation of PHC expenditure using this operational definition therefore requires that countries are able to produce health accounts in SHA 2011, including current health expenditure disaggregated by health care functions (HC classification) and crossed with other relevant classifications (health care providers HP, health financing schemes HF, revenues of financing schemes FS, etc.).

The objective of this document is to provide guidance for estimating health expenditure by functions (HC) in health accounts using the SHA 2011 framework, and therefore estimating Primary Health Care expenditure using a standardized methodology for cross country comparison.

[1] Vande Maele N., Xu K., Soucat A., Fisher l., Aranguren M., Wang H. (2019), *Measuring primary healthcare expenditure in low-income and lower middle-income countries*. BMJ Glob Health 2019;4:e001497.

I. Primary health care and health care functions definitions

Primary Health Care (PHC)[2]

The concept of Primary Health Care (PHC) has been repeatedly reinterpreted and redefined since 1978. In some contexts, PHC refers to the provision of ambulatory or first-contact personal health care services. In other contexts, it is understood as a set of priority health interventions for low-income populations (selective PHC). Some understand PHC as an essential component of human development, focusing on the economic, social and political aspects rather than simply health service provision. Each of these interpretations is a simplification of the broader definition set out in the Declaration of Alma-Ata, and their implementation carries the risk of missing out on the benefits of a comprehensive PHC approach. A clear and simple definition of PHC is needed to facilitate the coordination of future PHC efforts at the global, national, and local levels and to guide their implementation.

PHC is a whole-of-society approach to health that aims to ensure the highest possible level of health and well-being and their equitable distribution by focusing on people´s needs and preferences (as individuals, families, and communities) as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation and palliative care, and as close as feasible to people's everyday environment. The experience accumulated over the past 40 years supports a comprehensive definition of PHC, which incorporates three inter-related components:

- Meeting people's health needs through comprehensive promotive, protective, preventive, curative, rehabilitative, and palliative care throughout the life course, strategically prioritizing key health care services aimed at individuals and families through primary care and the population through public health functions as the central elements of integrated health services;
- Systematically addressing the broader determinants of health (including social, economic and environmental factors, as well as individual characteristics and behaviour) through evidence-informed policies and actions across all sectors; and
- Empowering individuals, families, and communities to optimize their health, as advocates for policies that promote and protect health and well-being, as co-developers of health and social services, and as self-carers and caregivers.

PHC is rooted in a commitment to social justice, equity and participation. It is based on the recognition that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction, as stated in the Constitution of the World Health Organization and reinforced in the Universal Declaration on Human Rights: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services". This underlines the responsibility of governments for making quality essential health services available and accessible and for implementing policies that promote and protect health and well-being. Numerous comparative analyses of health systems have

[2] *A vision for primary health care in the 21st century: towards universal health coverage and the Sustainable Development Goals*. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF), 2018 (WHO/HIS/SDS/2018.X)

demonstrated that PHC is the most equitable, efficient and effective strategy to enhance the health of populations.

Health care functions (HC)

The System of Health Accounts (SHA 2011)[3] provides a systematic description of the financial flows related to the consumption of health care goods and services, to describe a health system from an expenditure perspective. The health care function (HC) is a core classification and the basis of the definition of boundaries of health care activities within SHA 2011: activities with the primary purpose of improving, maintaining and preventing the deterioration of the health status of persons and mitigating the consequences of ill-health through the application of qualified health knowledge. The functional classification is used to group health care goods and services by purpose, cross these groups with other relevant health accounts classifications and to generate relevant indicators about the functional structure of the health system. It should be noted that in the SHA 2011 framework, capital and current expenditures are separated, and that the functional classification excludes capital investment expenditure.

Health care functions are classified according to the purpose of health care services, the mode of provision of the health service / good and the role in the health care process. The purpose of the consumption of health goods and services can be curative (HC.1), rehabilitative (HC.2), palliative / long-term (HC.3) or preventive (HC.6); ancillary services of diagnosis or transportation, and medical goods non-specified by function and non-specified by mode of provision, which the patient consumes directly, in particular during an independent contact with the health system, and that are not integral part of a care service package, are classified in specific categories (respectively HC.4 and HC.5). Health system governance and administration (HC.7) is an embedded activity in the provision of health care goods and services and is included within the boundaries of health care activities in SHA 2011. The mode of provision allows the split of curative, rehabilitative and long-term care at the second digit level between inpatient care (including patient's overnight stay), day-care, outpatient care and home-based care. Curative services are also disaggregated at the third digit level between general, dental and specialized services. See Table 1 for the classification of health care functions in SHA 2011.

Primary Health Care (PHC) expenditure

The System of Health Accounts 2011 does not include a readymade classification for Primary Health Care (PHC) mapping. However, components of PHC expenditure can be identified within the SHA 2011 framework, considering the boundaries of health activities considered in current health expenditure in SHA 2011. Based on the concept of first contact, PHC expenditure could be estimated using the

[3] OECD, Eurostat and World Health Organization (2017), *A System of Health Accounts 2011: Revised edition,* https://www.who.int/health-accounts/methodology/sha2011.pdf

Table 1. Classification of health care functions (HC), System of Health Accounts (SHA 2011)

SHA 2011 code	HEALTH CARE FUNCTIONS
HC.1	**Curative care**
HC.1.1	Inpatient curative care
HC.1.1.1	General inpatient curative care
HC.1.1.2	Specialised inpatient curative care
HC.1.1.nec	Unspecified inpatient curative care (n.e.c. -not elsewhere classified-)
HC.1.2	Day curative care
HC.1.2.1	General day curative care
HC.1.2.2	Specialised day curative care
HC.1.2.nec	Unspecified day curative care (n.e.c.)
HC.1.3	Outpatient curative care
HC.1.3.1	General outpatient curative care
HC.1.3.2	Dental outpatient curative care
HC.1.3.3	Specialised outpatient curative care
HC.1.3.nec	Unspecified outpatient curative care (n.e.c.)
HC.1.4	Home-based curative care
HC.1.nec	Unspecified curative care (n.e.c.)
HC.2	**Rehabilitative care**
HC.2.1	Inpatient rehabilitative care
HC.2.2	Day rehabilitative care
HC.2.3	Outpatient rehabilitative care
HC.2.4	Home-based rehabilitative care
HC.2.nec	Unspecified rehabilitative care (n.e.c.)
HC.3	**Long-term care (health)**
HC.3.1	Inpatient long-term care (health)
HC.3.2	Day long-term care (health)
HC.3.3	Outpatient long-term care (health)
HC.3.4	Home-based long-term care (health)
HC.3.nec	Unspecified long-term care (n.e.c.)
HC.4	**Ancillary services (non-specified by function)**
HC.4.1	Laboratory services
HC.4.2	Imaging services
HC.4.3	Patient transportation
HC.4.nec	Unspecified ancillary services (n.e.c.)
HC.5	**Medical goods (non-specified by function)**
HC.5.1	Pharmaceuticals and Other medical non-durable goods
HC.5.1.1	Prescribed medicines
HC.5.1.2	Over-the-counter medicines
HC.5.1.3	Other medical non-durable goods
HC.5.2	Therapeutic appliances and Other medical goods
HC.5.2.1	Glasses and Other vision products
HC.5.2.2	Hearing aids
HC.5.2.3	Other orthopaedic appliances and prosthetics (excluding glasses and hearing aids)
HC.5.2.9	All Other medical durables, including medical technical devices
HC.5.nec	Unspecified medical goods (n.e.c.)
HC.6	**Preventive care**
HC.6.1	Information, education and counselling (IEC) programmes
HC.6.2	Immunisation programmes
HC.6.3	Early disease detection programmes
HC.6.4	Healthy condition monitoring programmes
HC.6.5	Epidemiological surveillance and risk and disease control programmes
HC.6.6	Preparing for disaster and emergency response programmes
HC.6.nec	Unspecified preventive care (n.e.c.)
HC.7	**Governance, and health system and financing administration**
HC.7.1	Governance and Health system administration
HC.7.2	Administration of health financing
HC.7.nec	Unspecified governance, and health system and financing administration (n.e.c.)
HC.9	**Other health care services not elsewhere classified (n.e.c.)**

Source: OECD, Eurostat and World Health Organization (2017), *A System of Health Accounts 2011: Revised edition*

healthcare function classification (HC), which refers to the purpose of activities, or alternatively using the classification of health care provider (HP), which refers to the facilities and actors that deliver health care goods and services.

PHC expenditure was defined following a global consultation process on how SHA 2011 could be used to monitor PHC expenditure, with a series of technical discussions and consultations with health care practitioners, policy makers, and technical experts from a wide range of countries through WHO regional offices, specific health programs, international organizations, and research institutes. The consulted PHC experts were asked to map the concept of 'first contact' against the global standard and to prepare a working definition (which may differ from country context-specific PHC expenditure).

Based on this, the definition is intended to include the following services:

- General outpatient curative care (HC.1.3.1)
- Dental outpatient curative care (HC.1.3.2)
- Curative outpatient care, n.e.c. (HC.1.3.nec)
- Home-based curative care (HC.1.4)
- Outpatient (HC.3.3) and home-based (HC.3.4) long-term health care
- Preventive care (HC.6)
- Part of medical goods provided outside health care services (80% of HC.5)
- Part of health system administration and governance (80% of HC.7)

There is strong consensus on including prevention and general outpatient services, no matter home-based or long-term health care, or general dental care, as PHC. To what extent to include HC 5 and Hc7 are often context dependent. HC5 is only part of the expenditure on medicines and medical goods, including specifically the expenditures that are not already included in the treatment and self-purchased over-the-counter (OTC) medicines in pharmacies or markets. Broadly there are three components in HC5: inpatient medicines, outpatient medicines and self-purchased medicines.

Conceptually it is clear that the self-purchased OTC medicines and the general outpatient medicines are part of PHC. Inpatient related medicines should not be included in PHC. However, the disaggregation of these three parts of the expenditure is rarely available. The inclusion of the entire HC5 will overestimate PHC spending and the exclusion of HC5 will underestimate PHC spending. How much HC5 should be included in PHC is very much context dependant. The 80% proportion is mainly reliant on expert opinions based on some individual case studies.

In most countries, inpatient medicine is integrated in inpatient expenditure. However, it also common, particularly in low income settings, that the needed medicines are not available in the hospital and patients have to purchase them elsewhere. For outpatient medicines, one difficulty is to separate general outpatient from specialized outpatient medicines. Furthermore, there are diverse settings on how outpatient medicines are paid. In some countries most of the outpatient medicines are paid together with consultation fees and cannot be separated, while in others outpatient medicines are always purchased separately from pharmacies. Whether the outpatient medicine is integrated in the consultation fees or not does not affect the PHC expenditure in total, it provides different pictures on the expenditure of medicines component of PHC.

On HC7, the logic is that the governance functions are mainly related to policy making and implementation, which are considered as population-based interventions in the broader public health scope, and therefore belong to PHC. However, it is important to note that the spending on governance (mostly the health ministry and local health authorities, and insurance administration) also reflects the efficiency and effectiveness of the governance of the system. A country with a higher HC7 would show higher spending on PHC, yet it may be due to inefficient governance/institutions.

To reach a consensus on a working definition, WHO ran comparative and sensitivity analysis on a handful of working definitions, resulting from the global consultations. These analyses were presented and discussed at the 40th PHC anniversary in Astana on October 2018 and published in 2019 [4], after which the working definition was finalized as presented above.

The functional classification organizes expenditure by type of services, from which be differentiated services that are first contact, coordinated, continued, and comprehensive services, from services that are specialized referral services. The cross-table HC x HP provides much more insight on service delivery arrangements in specific countries. The choice of not using the cross classification to define PHC expenditure was for reasons of data availability and the comparability across different health system settings. However, HC x HP tables are useful for country-specific discussion and to estimate PHC using alternative working definitions (see example Box 1).

Box 1. Example of alternative operational definition of PHC expenditure: Brazil [5]

Primary Health Care expenditure definition based on SHA 2011 in Brazil uses both classifications of functions (HC) and providers (HP), and includes the following items:

- Typical functions of PHC (for all providers): general (HC.1.3.1) and dental (HC.1.3.2) outpatient curative care, home-based curative care (HC.1.4), outpatient rehabilitative care (HC.2.3), outpatient (HC.3.3) and home-based (HC.3.4) long-term care, preventive care (HC.6, except HC.6.6 Preparing for disaster and emergency response programmes);
- Related functions for typical PHC providers of the country: laboratory services (HC.4.1), imaging services (HC.4.2), prescribed medicines (HC.5.1.1) and other medical non-durable goods (HC.5.1.2), only for non-specialised ambulatory health care centres (HP.3.4.5), medical and diagnostic laboratories (HP.4.2) and pharmacies (HC.5.1, excluding private pharmacies not accredited to the popular pharmacy program);
- Part of health system administration and governance costs: the share of PHC previously calculated in current health expenditure is applied to HC.7 (Governance, and health system and financing administration).

[4] Vande Maele N., Xu K., Soucat A., Fisher l., Aranguren M., Wang H. (2019), *Measuring primary healthcare expenditure in low-income and lower middle-income countries*. BMJ Glob Health 2019;4:e001497.
[5] Ministério da Saúde and Fiocruz, *Cuentas de salud en atención primaria utilizando el SHA - Brasil*, PAHO health accounts meeting, Quito, February 2019.

Moreover, the following indicators were chosen as policy relevant for PHC [6], as they reflect the importance given to PHC expenditure at country level and by different financing sources (domestic public and external) in relation with current health expenditure and macroeconomic indicators.

1. Current PHC Expenditure per capita in US$
2. Current PHC expenditure as % of current health expenditure
3. Domestic general government PHC expenditure as % of current PHC expenditure
4. Externally funded PHC expenditure as % of current PHC expenditure
5. Domestic general government PHC expenditure as % of domestic general government health expenditure (GGHE-D)[7]
6. Externally funded PHC expenditure as % of externally funded health expenditure (EXT)
7. Domestic general government and externally funded PHC expenditure as % of Gross Domestic Product (GDP)

II. Production of the health care functions classification in health accounts

Analysis and mapping of health services and goods

A previous step to the production of health accounts is the analysis and mapping of the country's health system, in order to identify financing agents, financing schemes, health care providers, etc. This analysis, ideally with health systems experts of the country, can also include health functions, by identifying for each category of function if the health service / good exists in the country, what type of providers produce it and how is it financed (financing scheme / agent).

In that sense, it is useful to build a preliminary mapping of functions (HC) crossed with providers (HP), since there is a direct relationship between the provider category and its principal activity. Several categories of providers are generally single function providers: residential long-term care facilities (HP.2) provide as main activity long-term care (HC.3), providers of ancillary services (HP.4) provide as main activity ancillary services (non-specified by function) (HC.4), retailers and other providers of medical goods (HP.5) provide as main activity medical goods (non-specified by function) (HC.5), providers of preventive care (HP.6) provide as main activity preventive care (HC.6) and providers of health system administration and financing provide as main activity governance and administration services (HC.7). These categories can of course provide health care with other purposes, but it should be marginal. Hospitals (HP.1) and to a lesser extent, providers of ambulatory health care (HP.3), are multi-function

[6] https://improvingphc.org/sites/default/files/VSP_Detailed_Methodology_Note.pdf

[7] For calculation of Indicators please see "Indicators of the Global Health Expenditure Database", WHO, http://apps.who.int/nha/database/DocumentationCentre/Index/en

providers and can generally produce curative services, rehabilitation services, long-term care, ancillary services and preventive care. Table 2 provides a visualization of principal and secondary crosses between HC and HP. Note that table 2 is not exhaustive and non-marked crosses are not impossible, but they are less likely to be reported in a health system.

Moreover, some classification criteria of health services, detailed in the SHA 2011 manual [8], should be recorded in order to not make mapping mistakes:

- Administration of individual health services are directly assigned to the main functions HC.1 to HC.6: for example, administration costs of a hospital which provides curative care and preventive care are split between HC.1 and HC.6; HC.7 only includes governance and administration at the health system level, and can be provided only by providers of health system administration and financing (HP.7).
- Ancillary services (HC.4) and medical goods (HC.5) are reported separately only if they correspond to services and goods provided non-specified by function and non-specified by mode of provision, which the patient consumes directly (i.e. during an independent contact with the health system), and that are not integral part of a care service package. Ancillary services and medical goods provided during a curative / rehabilitative / long-term / preventive process are classified as HC.1, HC.2, HC.3 or HC.6: for example, drugs and laboratory services provided to inpatients of residential long-term care facilities during a

[8] OECD, Eurostat and World Health Organization (2017), *A System of Health Accounts 2011: Revised edition,* https://www.who.int/health-accounts/methodology/sha2011.pdf

Table 2. Main cross categories between health care functions and health care providers

Health care functions (HC)		Health care providers (HP)	HP.1 Hospitals	HP.2 Residential long-term care facilities	HP.3 Providers of ambulatory health care					HP.4 Providers of ancillary services	HP.5 Retailers and other providers of medical goods	HP.6 Providers of preventive care	HP.7 Providers of health system administration and financing	HP.8 Rest of economy
					HP.3.1 Medical practices	HP.3.2 Dental practice	HP.3.3 Other health care practitioners	HP.3.4 Ambulatory health care centres	HP.3.5 Providers of home health care services					
HC.1	**Curative care**		■		■	■	■	■	■					▒
HC.1.1	Inpatient curative care		■					▒						
HC.1.2	Day care curative care		■					▒						
HC.1.3	Outpatient curative care		■		■	■	■	■						▒
HC.1.3.1	*General outpatient curative care*		▒		■		■	■						▒
HC.1.3.2	*Dental outpatient curative care*					■								
HC.1.3.3	*Specialised outpatient curative care*		■		■									
HC.1.4	Home-based curative care								■					▒
HC.2	**Rehabilitative care**		▒				▒	▒	▒					
HC.3	**Long-Term Care**		▒	■										▒
HC.4	**Ancillary Services**		▒							■				
HC.4.1	Laboratory services		▒							■				
HC.4.2	Imaging services		▒							■				
HC.4.3	Patient transportation									■				
HC.5	**Medical Goods**		▒		▒	▒	▒	▒			■			▒
HC.5.1	Pharmaceuticals and Other medical non-durable goods		▒		▒	▒	▒	▒			■			▒
HC.5.2	Therapeutic appliances and Other medical goods										■			
HC.6	**Preventive Care**		▒		▒	▒	▒	▒	▒			■	▒	
HC.7	**Governance and Administration**												■	

■ Main HC x HP crosses
▒ Other common HC x HP crosses

palliative care process are reported as HC.3.1. The distinction is more complicated for outpatients, but generally, ancillary services and medical goods purchased by the beneficiary following a health system contact (either as a result of prescription or as self-prescription) are registered as HC.4 / HC.5; ancillary services and medical goods integrated in this original health system contact are classified within the same function according to the purpose of this contact (HC.1, HC.2, HC.3 or HC.6).

- The split of activities by mode of provision (2nd digit level in HC.1, HC.2 and HC.3) is based on the following criteria: Inpatient care involves an overnight stay after admission; day care involve formal admission to a health care facility, but requires the patient to be discharged on the same day; outpatient and home-based care don't require formal admission, and can be differentiated based on the location from where the services are provided (home-based care is provided at the patient's place of residence).

- The split of curative care at the 3rd digit level (general care, specialised care, and in the case of HC.1.3, dental care) is based on the type of service, not on the category of the provider: Specialised services relate to curative care involving a higher level of technology and skills, which are expected to be consumed by selected cases of less frequent and more complex health care needs. They are also likely to be of higher cost and often accessed through a referrals system. General care is often the entry point to the health care system and covers the more frequent and uncomplicated cases of all medical fields (including basic care provided to complex health care needs, due to the lack of capacities and technology for specialised care).

- Long-term care (HC.3) is exclusively for patients with a degree of long-term dependency and includes medical or nursing care, and personal care services which provide help with activities of daily living (ADL); it is frequently associated with instrumental activities of daily living (IADL), which are excluded from health expenditure. Long-term care is associated with conditions that require a high level of dependency and for which rehabilitation is not possible. See OECD guidelines for long-term expenditure for more details [9].

- Health care functions are not mapped with the providers class "Other industries n.e.c.[10]" (HP.8.9), which is only used to map healthcare related classes (HCR and HKR). It is, for example, the case of establishments of long-term social care providing long-term care social services (HCR.1).

- Education and training of human resources for health and research and development activities are not part of the population's health final consumption and are therefore excluded from current health expenditure. These activities are reported as a memorandum item in the capital account of the SHA 2011.

[9] OECD (2018), *Accounting and mapping of long-term care expenditure under SHA 2011*
[10] n.e.c. stands for not else classified

Data sources for the estimation of health expenditure by functions (HC)

Data used to identify the purpose of the health service / good consumed can be from public or private sources; from a financing agent source (Government, insurer, NGO) or a provider source (hospital records); to be used with a top-down approach (aggregated data) or a bottom-up approach (disaggregated data at provider or cost centre level); it can be a financial data, used directly to estimate the health expenditure, or other secondary source on monetary data (production, coverage, quantities) used to split aggregated health expenditure between several healthcare functions; financial data reported can be expenditure or costs. The list below attempts to report the main sources of information used to disaggregate health expenditure by function:

Primary data used to estimate health expenditure by functions:

- Government (central government and regional / local governments) expenditure reports or budget classified by function, programme / project and activities or results (can differ in time in the aggregation or disaggregation of the activities);
- Insurance claims databases (for social insurance and private insurance) or patient records database if the payment system is mostly pay by item of service;
- Reports of payments made to health care providers;
- Consumption reports of national accounts, using the Classification of Individual Consumption by Purpose (COICOP);
- Households budget surveys and health-specific surveys to households (usually available at the 1st or 2nd level digit for HC) (to be crossed with national accounts final consumption data);
- Surveys to insurance companies and other corporations;
- Reports of health insurance associations or health insurance supervision units;
- Donors expenditure or disbursement reports, projects reports;
- NGO projects reports, or activities reports;
- Private health providers sales reports (for example from pharmacies);
- Data from tax collection to health care providers or financing agents.

Secondary data mainly used to split health expenditure by functions:

- Health providers financial records with costs by service, unit costs, central pharmacy data, etc.; can be disaggregated by source to identify out-of-pocket payments and other sources;
- Service charges / fees legal tariffs or average prices paid by financing agents for health goods and services (in case of lack of cost data);
- Surveys to health care providers / facilities and health personnel;
- Health providers provision databases (by activity: inpatient, outpatient, etc.), which can be aggregated by public institutions of statistics or supervision of health system;
- Previous health accounts: in case of not be able to collect all the information every year, previous health accounts studies and databases can be used to estimate the functional structure of part of health care providers.

During the general quality assessment process of data sources for health accounts, the health account team will decide which data to use and how to use or adjust it. Particular attention should be given to the information which will be used to report and estimate the HC classification and its cross with others SHA 2011 classifications:

- Sometimes, the classification of functions of activities by the government or others can be very different from the SHA 2011 classification. That's why it is essential to identify differences in definitions / boundaries between SHA and national accounting in order to aggregate and disaggregate national reports correctly; it is recommended to produce a table of correspondence between HC categories and the national functional categories.
- Available functional data of health care providers is not always linked to a specific financing scheme (HF) or revenue (FS). In this case, for goods and services not specified by scheme or source, we generally assume that the same structure of financing (HF and FS) is applied to all the functions of the provider. For example, if 60% of the expenditure of a given health care provider is financed by government transfers (FS.1) and 40% by external resources (FS.2 or FS.7), we can assume that 60% of the expenditure in each HC category is proportionally financed, 60% by government transfers and 40% by external resources. In the majority of cases, this assumption applies only to a part of the providers, since some identified goods and services are directly linked to a specific financing scheme or source (insurance reimbursements, out-of-pocket).

Depending on the data sources available, it might be useful in the health accounts production process to identify and classify health care providers first, and then split health expenditure data by functions for each category of provider using information specific to the provider category (budget, claims, surveys, services costs, production statistics, etc.).

Estimation process for expenditure data not reported by activity

Even when expenditures by activities are reported, it is sometimes necessary to make estimations to split health expenditure data between several SHA 2011 functions.

There are differences between the bottom-up method, when HC and HP data is available at the facility level, and top-down method (use of assignation keys to disaggregate HC for each HP). In general, there is a need to use both methods according to available data sources.

A widely-used methodology to estimate HC disaggregation is to estimate shares to be applied to aggregated health expenditure using quantities and associated cost-factors. This method can be applied to any SHA 2011 category to be split by function, estimating a perceptual structure using quantities of services produced and the cost of these services (see box 2). Alternatively, if no cost data is available, tariffs, average prices or adjusted costs levels from other providers can be used.

Box 2. Example of using quantities and associated cost-factors to split HC.1

In this example, health expenditure data in curative care of a given country is only available by category of provider (Reported expenditure by providers in NCU); however, production data (number of inpatient bed days and number of outpatient visit) and cost data are available:

	Unit cost data		Provider production		Health expenditure estimates		
Health provider category	Cost per impatient bed day in NCU (a)	Cost per outpatient visit in NCU (b)	Number of impatient bed days (c)	Number of outpatient visits (d)	HC.1.1	HC.1.3	Reported expenditure by providers in NCU (e)
Health Centre (no beds)	-	20	-	50	*0*	*1 000*	1 000
Health Centre (with beds)	-	22	-	100	*0*	*2 000*	2 000
Primary Hospital	150	25	10	50	*2 727*	*2 273*	5 000
Secondary Hospital	160	30	40	50	*8 101*	*1 899*	10 000
Tertiary Hospital	210	40	100	150	*32 558*	*7 442*	40 000
TOTAL					***43 386***	***14 614***	58 000

Available data
Estimated data

Multiplying unit costs by production, we can have a structure of costs for each type of provider, which is the applied to the expenditure of the provider:
HC.1.1 = (a * c / (a * c + b * d)) * e

According to available data, this methodology can be used to split health expenditure only for given factors of provision (for example, only for human resources remuneration). It should be recommended to apply distribution keys at the smallest level possible (for example, different HC distributions for each health provider or for each programme). Providers administrative expenses can be split by function in the same proportion than the rest of expenses.

When some data by function is available, allocation of specific providers to a unique HC category is possible (see Box 3). Another widely-used methodology to estimate HC disaggregation consists of using HC expenditure of related activities: for example, laboratory services for hospital patients can be disaggregated between HC.1.1, HC.1.2 and HC.1.3 using the rest of hospital expenditure disaggregation structure between HC.1.1, HC.1.2 and HC.1.3.

Box 3. Country example: direct allocation of expenditure by HC

If health expenditure of some providers might not be disaggregated by function or without secondary data to estimate functions; then, an allocation is possible. It can be the associated function in cases of single function providers according to Table 2, or the main function in case of multiple functions providers. For example, Canada does not have data about activities of medical practices (HP.3.1) and allocate this expenditure to HC.1.3 due to data limitations (HC.1.3.1 for general practitioners and HC.1.3.3 for specialised practitioners); surgeries performed in hospitals by independent practitioners are disaggregated between HC.1.1 and HC.1.2 according to the total number of surgeries performed in hospitals. Using similar criteria, the split of outpatient curative care (HC.1.3) between general (HC.1.3.1) and specialised (HC.1.3.3) curative care in hospitals is directly allocated: outpatient curative care in specialty clinics is considered as HC.1.3.3, expenditure in other hospitals is considered as HC.1.3.1 (a deviation from SHA 2011 methodology).

In a similar manner, when HC data is available only for some categories of providers or only for some categories of financing schemes, it is possible to use this available information to partially split in HC categories the current health expenditure of schemes or providers not split by functions. For example, typically, information about out-of-pocket expenditure of households estimated with surveys is aggregated to a certain level and estimations are needed to report the expenditure in SHA 2011 categories; in this case, data from other financing schemes could be used to estimate the split between related categories (only if we don't have more specific data and if these financing schemes are likely to have similar patterns in the category we want to split). For example, the split of household's expenditure in hospitalization services between HC.1.1 (inpatient care) and HC.1.2 (day care) can be estimated using the structure of curative inpatient and day care expenditure of other financing schemes (HF.1 and HF.2), like in Canada's health accounts. In the same way, expenditure for some providers without information to estimate HC can be estimated with the structure by functions of other providers of the same type. For example, Austria lacks data on home-based long-term care in one province and uses data from other provinces to disaggregate the expenditure between long-term health expenditure (HC.3.4) and long-term care social assistance (HCR.1).

III. Publication of health expenditure by function and PHC on GHED

Published data and indicators

This section explains how PHC indicators are estimated based on countries' health accounts data by function and the quality control method.

For the 2019 update, the WHO Global Health Expenditure Database is publishing only the main function aggregates: curative care at the 3rd level digit, long-term care at the 2nd level digit and other functions (HC.2, HC.4, HC.5, HC.6, HC.7 and HC.9) at the 1st level digit (see Table 2). Primary Health Care (PHC) expenditure estimated using WHO operational definition are published.

Table 3 – Health care functions (HC) classification published in GHED (2019 update)

SHA 2011 code	HEALTH CARE FUNCTIONS
HC.1	**Curative care**
HC.1.1	Inpatient curative care
HC.1.2	Day curative care
HC.1.3	Outpatient curative care
HC.1.3.1	General outpatient curative care
HC.1.3.2	Dental outpatient curative care
HC.1.3.3	Specialised outpatient curative care
HC.1.3.nec	Unspecified outpatient curative care (n.e.c.)
HC.1.4	Home-based curative care
HC.1.nec	Unspecified curative care (n.e.c.)
HC.2	**Rehabilitative care**
HC.3	**Long-term care (health)**
HC.3.1	Inpatient long-term care (health)
HC.3.2	Day long-term care (health)
HC.3.3	Outpatient long-term care (health)
HC.3.4	Home-based long-term care (health)
HC.3.nec	Unspecified long-term care (n.e.c.)
HC.4	**Ancillary services (non-specified by function)**
HC.5	**Medical goods (non-specified by function)**
HC.6	**Preventive care**
HC.7	**Governance, and health system and financing administration**
HC.9	**Other health care services not elsewhere classified (n.e.c.)**
PHC	***Primary Health Care expenditure***

Published current health expenditure by functions is crossed with the classification of revenues of health care financing schemes (FS), in order to report:

- Current health expenditure by function (HC x all FS);
- Domestic general government expenditure by function (HC x (FS.1 + FS.3));
- Externally funded expenditure by function (HC x (FS.2 + FS.7)).

Moreover, WHO will publish and highlight seven key indicators of Primary Health Care expenditure:

- Primary Health Care (PHC) expenditure per capita in USD;
- Primary Health Care (PHC) expenditure as % of current health expenditure (CHE);
- Domestic general government expenditure on PHC as % of domestic general government health expenditure (GGHE-D);
- Domestic general government expenditure on PHC as % of PHC expenditure;

- Externally funded PHC expenditure as % of PHC expenditure;
- Externally funded PHC expenditure as % of externally funded health expenditure (EXT)
- Domestic general government expenditure on PHC as % of Gross Domestic Product (GDP)

While best efforts were made to identify and include appropriate health care services classifications in the definition, it should be noted that SHA 2011 currently does not necessarily break out services in classifications ideal for determining PHC-specific services, nor for distinguishing PHC services from other types of health care services. As a result, compromises were made in a best effort to classify services, however, in some cases, specific PHC-related or non-PHC related services may be excluded or included, respectively. WHO is consulting and working closely with countries to review the preliminary data and identify if improvements of data is needed. In such situations, adjustments may be applied on the 2016 published data, or for future health accounts' results on expenditure by function (and subsequently PHC expenditure estimates). The data review process is ongoing, via country profiles – using all years of health accounts data and therefore reviewing time trends of expenditure by function and expenditure on PHC – regional peer meetings; global methodological meetings; and technical country-specific visits.

Health expenditure data collection spreadsheet

For some countries, HC data were reported using a cross table with revenues of health financing schemes (HC x FS). This helps consolidate data and serves as a check for data quality (see annex A). The spreadsheet table used also allows to review historical data by functions for all FS, for domestic general government expenditure (FS.1 + FS.3), out-of-pocket expenditure (FS.6.1), other domestically funded expenditure (FS.4 + FS.5 + FS.6.2 + FS.6.3) and externally funded expenditure (FS.2 + FS.7).

Primary Health Care (PHC) expenditure is estimated in the data collection spreadsheet using WHO operational definition (PHC = HC.1.3.1 + HC.1.3.2 + HC.1.3.nec + HC.1.4 + HC.3.3 + HC.3.4 + HC.6 + 80% of HC.5 + 80% of HC.7). Using the HC x FS cross-table, PHC expenditure financed by domestic general government and funded externally can be calculated.

Data adjustments and discrepancies between country and WHO data

The data is collected and prepared from country in-depth health accounts studies. The health accounts provide allocation keys for splitting each FS category among the HC classification. When better data on HF and FS are available we take the updated data and apply to the same allocation keys from the NHA study to obtain updated HC expenditure by funding sources. Similarly, when FS x HC for 2017 is not available, we apply the same set of keys from 2016 study to get 2017 FS X HC estimation.

For some countries, 2016 and 2017 expenditure data are derived from earlier health accounts. It is assumed that schemes use resources across functions following the same pattern as in the previous year. For example, 2017 expenditure by function is estimated by applying the 2015 proportions to the 2017 aggregates (current health expenditure, domestic general government health expenditure, externally funded health expenditure), in the same way as presented in table 4. In this example, following a correction of the country data, its health expenditure data, FS.1 (+20) and FS.5 (-10) were

modified. In this case, we simply calculate the HC shares for each FS category (FS.1: 30% is HC.1.3.1, 30% HC.1.3.3, etc.) and we apply these shares to the new FS total: For FS.1, HC.1.3 = 60% (90/150 in original data) x 170 (new FS.1 value).

Table 4. Example of adjustments to HC data when FS is adjusted in GHED

		Original HA data				Share of FS (from original applied to adjusted data)			Adjusted data			
HC	**Million NCU**	**FS.1**	**FS.5**	**FS.6**	**Total**	**FS.1**	**FS.5**	**FS.6**	**FS.1**	**FS.5**	**FS.6**	**Total**
HC.1.3	**Outpatient curative**	***90***	***45***	***70***	***205***	***60%***	***75%***	***70%***	***102***	***37,5***	**70**	***209,5***
HC.1.3.1	General outpatient	*45*	*30*	*10*	*85*	*30%*	*50%*	*10%*	*51*	*25*	10	*86*
HC.1.3.3	Specialised outp.	*45*	*15*	*60*	*120*	*30%*	*25%*	*60%*	*51*	*12,5*	60	*123,5*
HC.5	**Medical Goods**		***15***	***30***	***45***	***0%***	***25%***	***30%***		***12,5***	**30**	***42,5***
HC.6	**Preventive Care**	***30***			***30***	***20%***	***0%***	***0%***	***34***			***34***
HC.7	**Governance and Administration**	***30***			***30***	***20%***	***0%***	***0%***	***34***			***34***
All HC	**TOTAL**	***150***	***60***	***100***	***310***	*100%*	*100%*	*100%*	**170**	**50**	**100**	**320**

New values
(+20) (-10)

Health accounts values
Adjusted values

The estimation of PHC expenditure can be affected by the lack of disaggregated HC data: in the case of lack of HC.1.3 data at the 3rd digit level, the whole HC.1.3 category is considered as HC.1.3.nec and then included in PHC expenditure (PHC expenditure in outpatient curative care = HC.1.3.1 + HC.1.3.2 + HC.1.3.nec). In the case of a lack of HC data at the 2nd digit level for long term care, HC.3 is not included in the calculation of PHC expenditure, since most of long term care corresponds to inpatient care. In that sense, it is important to support countries in the production of complete HC classification in order to not have to make these assumptions. These proposals are for cross country comparison. Other assumptions and estimation methods may apply for country specific analysis.

Estimation of HC x FS cross

Most of the HC x FS tables are reported directly from the Health Accounts Production Tool (HAPT) for countries with available health accounts studies in the ptstudy format. For other countries with SHA 2011 health accounts studies, an estimation is generally used to cross HC with FS, since the HC x FS table is not part of the main reported tables. This estimation is based on a 3-dimensions table HC x HF x FS, made using the HC x HF table and HF x FS table reported in health accounts, by applying the FS share of each financing scheme to HC expenditure within the same scheme (see example in table 5).

In this example, the country did not provide a specific HC x FS table to be reported directly, but only health accounts main tables HC x HF and HF x FS. According to the HF x FS table, we know that 90% of Government's schemes expenditure (HF.1.1) is financed with transfers from domestic public resources (FS.1) and 10% with external resources (FS.2). To obtain HC x FS.1 and HC x FS.2, we apply this same share of 90% - 10% to each HC category financed with HF.1.1: HC.1.1 x HF.1.1 x FS.1 = 20 (HC.1.1 x HF.1.1 expenditure) x 90% (HF.1.1 x FS.1.1 as % of HF.1.1) = 18. After the replication of the same calculation for each HC x HF x FS cross, we obtain a complete HC x FS table. For several HF categories, it's common that only one FS category is involved, and then no estimation is necessary (for example in table 5, out-of-pocket spending HF.3 is only financed with FS.6.1).

Table 5. Example of estimations of functions crossed with FS when HC x FS table not available

		HF.1.1			HF.2.1	HF.2.2			HF.3	Total
HC	**Million NCU**	**FS.1**	**FS.2**	**Total**	**FS.5**	**FS.6**	**FS.7**	**Total**	**FS.6.1**	**Total**
HC.1	**Curative care**	*63*	*7*	**70**	**30**	*4*	*16*	**20**	**70**	**205**
HC.1.1	Inpatient curative care	*18*	*2*	20	5				10	85
HC.1.3	Outpatient curative care	*45*	*5*	50	25	*4*	*16*	20	60	120
HC.5	**Medical Goods**				**15**				**30**	**45**
HC.6	**Preventive Care**	*18*	*2*	**20**		*8*	*32*	**40**		**30**
HC.7	**Governance and Administration**	*9*	*1*	**10**						**30**
All HC	**TOTAL**	**90**	**10**	**100**	**35**	**12**	**48**	**60**	**100**	**310**

Health accounts values
Estimated values

Quality checks and data validation

WHO has a vigorous data quality review process, including internal and external consistency and accounting for policy coherence.

Internal consistency:

- Data gap analysis;
- Negative values indication;
- Cross-classification comparison, in particular HC x HP (see table 2);
- Consistency checks and atypical entries checks (comparing totals, comparing sub-totals with totals, comparing dimensions);

External consistency:

- Different data sources;
- Different estimation methods;
- Macro indicators;

Policy coherence:

- Time trends vs. policy changes/health reforms;
- Revisions of historical data and time consistency (HC between years, growth rates).

Data validation should be conducted at national, regional and global level, to achieve consistency and improve quality of the health expenditures estimates. Validation at national and regional level includes the validation by national authorities, and approval for publication of health accounts data.

IV. Discussion and way forward

The demand for an international and standardized monitoring of primary health care expenditure is clear. This document provides practical guidance for collecting data according to the HC classification and the estimation methods for HC expenditure by funding sources. The working definition for PHC expenditure used by WHO is for cross country comparison. It provides the benchmark for comparing across countries and over timer. While cross country comparison informs policy dialogue and development, country specific analysis is critical. Each country has unique service delivery and financing systems. Country specific monitoring and analysis needs to be tailored according to the context.

Monitoring PHC expenditure at global and national levels require more granular and better quality of data. PHC measurement will benefit from more information from increased data collection efforts, including on household survey questionnaires, increased facility-based data collection, and leveraging routine information systems.

Last but not least, PHC expenditure indicators are only the starting point for policy dialogue. To understand why one country spends more than the other requires in-depth studies. In a given service delivery system, finding out who is in the best position to provide what types of services and how these services should be funded to promote efficiency and equity are extremely important.

Annexes

Annex A - HC x FS table for current health expenditure in 2017 by function, source and primary healthcare

HC code	MILLION NCU	FS.1	FS.2	FS.3	FS.4	FS.5	FS.6	*FS.6.1*	*FS.6.2*	*FS.6.3*	FS.7	FS.nec	TOTAL
HC.1	**Curative care**												
HC.1.1	Inpatient curative care												
HC.1.2	Day care curative care												
HC.1.3	Outpatient curative care												
HC.1.3.1	*General outpatient curative care*												
HC.1.3.2	*Dental outpatient curative care*												
HC.1.3.3	*Specialised outpatient curative care*												
HC.1.3.nec	*Unspecified outpatient curative care (n.e.c.)*												
HC.1.4	Home-based curative care												
HC.1.nec	Unspecified curative care (n.e.c.)												
HC.2	**Rehabilitative care**												
HC.2.1	Inpatient rehabilitative care												
HC.2.2	Day care rehabilitative care												
HC.2.3	Outpatient rehabilitative care												
HC.2.4	Home-based rehabilitative care												
HC.2.nec	Unspecified rehabilitative care (n.e.c.)												
HC.3	**Long-Term Care**												
HC.3.1	Inpatient Long-Term Care												
HC.3.2	Day care Long-Term Care												
HC.3.3	Outpatient Long-Term Care												
HC.3.4	Home-based Long-Term Care												
HC.3.nec	Other Long-Term Care												
HC.4	**Ancillary Services**												
HC.5	**Medical Goods**												
HC.6	**Preventive Care**												
HC.7	**Health System Governance and Administration**												
HC.9	**Other health care services not elsewhere classified (n.e.c.)**												
All HC	**TOTAL**												
PHC TOTAL	HC.1.3.1 + HC.1.3.2 + HC.1.3.nec + HC.1.4 + HC.3.3 + HC.3.4 + HC.6 + 80% of HC.5 + 80% of HC.7												