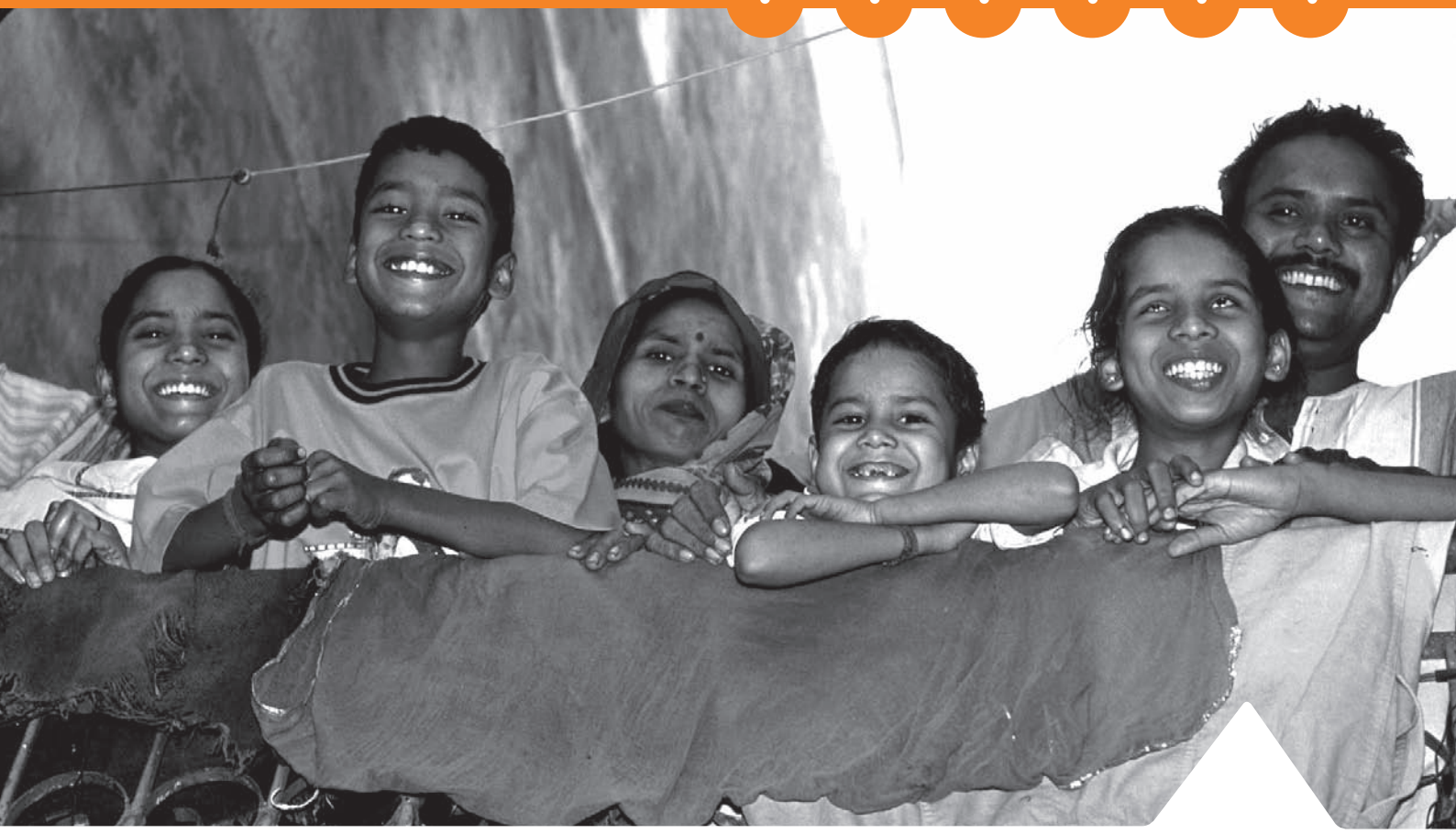
MONITORING THE BUILDING BLOCKS OF HEALTH SYSTEMS:

A HANDBOOK OF INDICATORS AND THEIR MEASUREMENT STRATEGIES



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Contents

Abbreviations

ARV	antiretroviral
DQAF	Data Quality Assessment Framework
GAVI	Global Alliance on Vaccines Initiative
GDDS	General Data Dissemination Strategy
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GDP	gross domestic product
GGE	general government expenditure
GGHE	general government expenditure on health
HAI	Health Action International
HISPIX	Health Information System Performance Index
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
HMIS	Health Management Information System
HMN	Health Metrics Network
HRIS	Human Resources Information System
IHP+	International Health Partnership and related initiatives
ICPD	International Conference on Population and Development
IHR	International Health Regulations
IMCI	Integrated Management of Childhood Illness
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of all Economic Activities
MDG	Millennium Development Goal
MSH	Management Sciences for Health
NHA	National Health Accounts
NGO	nongovernmental organization
NMP	National Medicines Policy
OECD	Organisation for Economic Co-operation and Development
OOP	out-of-pocket spending
PEPFAR	United States President's Emergency Plan for AIDS Relief
SHA	System of Health Accounts
THE	total expenditure on health
TPE	total pharmaceutical expenditure
USAID	United States Agency for International Development
WHO	World Health Organization

Introduction and objectives of the handbook

In recent years, significant progress has been achieved in delivering health-related interventions that are designed to achieve goals relating to improving maternal and child health, and reducing mortality and ill-health due to HIV/AIDS, tuberculosis and malaria. It is increasingly apparent, however, that the gains have been neither universal nor sufficiently broad-based and sustainable. Progress at the national level has not necessarily resulted in gains for most vulnerable population groups; in some instances, progress has stagnated or been reversed. There is mounting evidence that health systems that can deliver services equitably and efficiently are critical for achieving improved health status. Thus, many global health initiatives now incorporate attention to health systems strengthening in the support they provide to countries.

While this increased attention to the strengthening of health systems is welcome, it would not be sustainable in the absence of a sound monitoring strategy that enables decision-makers to accurately track health progress and performance, evaluate impact, and ensure accountability at country and global levels. Moreover, the use of results-based financing mechanisms by major global donors has created a further demand for timely and reliable data. There is also increasing in-country demand for data in the context of annual health sector reviews.

Information is needed to track how health systems respond to increased inputs and improved processes, and the impact they have on improved health indicators. This implies the need to define core indicators of health system performance while developing and implementing appropriate sustainable measurement strategies to generate the required data. However, on the supply side, there are major gaps in data availability and quality. Few developing countries are able to produce data of sufficient quality to permit the regular tracking of progress in scaling-up health interventions and strengthening health systems. Data gaps span the range of "input", "process", "output", "outcome" and "impact" indicators: e.g. few countries carry out regular national health accounts studies; data on the availability and distribution of health workers are often incomplete, inaccurate and out of date; few countries have systems that can monitor service delivery; and data on population access to essential services are limited.

What is a health system?

A health system consists of all the organizations, institutions, resources and people whose primary purpose is to improve health.[1,2] This includes efforts to influence determinants of health as well as more direct health-improvement activities. The health system delivers preventive, promotive, curative and rehabilitative interventions through a combination of public health actions and the pyramid of health care facilities that deliver personal health care — by both State and non-State actors. The actions of the health system should be responsive and financially fair, while treating people respectably. A health system needs staff, funds, information, supplies, transport, communications and overall guidance and direction to function. Strengthening health systems thus means addressing key constraints in each of these areas.

Frameworks for monitoring health systems performance

The multifaceted nature of health systems and the spread of direct and indirect responsibilities across multiple sectors, pose challenges in monitoring performance. In response, over the past several years, the World Health Organization (WHO) and its partners have been working to reach a broad-based consensus on key indicators and effective methods and measures of health systems capacity, including "inputs", "processes" and "outputs", and to relate these to indicators of "outcome". It is widely known that there are many potential advantages of a harmonized approach to health systems monitoring and evaluation, including reduced transaction costs, increased efficiency, and diminished pressures on countries. However, there are also identified practical issues to be addressed before greater harmonization can become a reality. The existence of multiple analytical and strategic frameworks for health systems results in considerable potential for duplication, overlap and confusion.[3] Existing frameworks include the WHO framework for health systems performance assessment *(1)*; the World Bank control knobs framework *(2)*; and the WHO building blocks framework *(3)*. Such frameworks have varying starting points, resulting in emphases on different outcomes to be tracked. Work is on to develop conceptual frameworks for health systems strengthening and to create a taxonomy that would permit clarification of the indicators, data sources and collection methods, and the analytics underpinning monitoring and evaluation. However, the choice of the strategic framework does not necessarily substantively affect the monitoring and evaluation strategy. There are many commonalities in the various strategic frameworks for health systems that permit a coherent approach to the choice of indicators and measurement strategies.

Health systems framework and building blocks

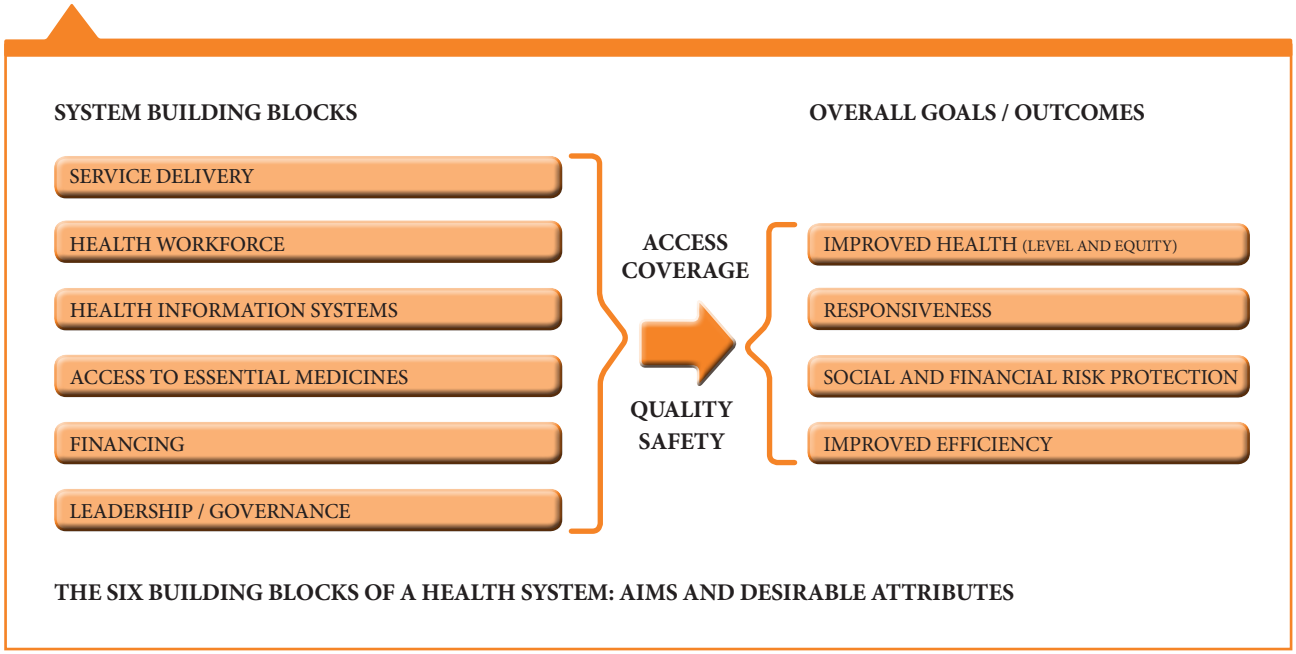
This handbook does not attempt to cover all components of the health system or deal with the various monitoring and evaluation frameworks. Instead, it is structured around the WHO framework that describes health systems in terms of six core components or "building blocks": (i) service delivery, (ii) health workforce, (iii) health information systems, (iv) access to essential medicines, (v) financing, and (vi) leadership/governance (see Figure 1).

1 World Health Organization, http://www.who.int/healthsystems/about/en/ accessed June 2010.

2 The terms "health system" and "health sector" are often used interchangeably with the latter interpreted as restricted to the actions of the government. This handbook focuses on aspects of the health system that are under the responsibility of ministries of health, including the provision of personal health services by both State and non-State actors.

3 For a recent overview see Shakerishvili G. *Building on health systems frameworks for developing a common approach to health systems strengthening*. Prepared for the World Bank, Global Fund to Fight AIDS, Tuberculosis and Malaria, and GAVI Alliance, Technical Workshop on Health Systems Strengthening, Washington, DC, June 25–27, 2009.

Figure 1. The WHO Health Systems Framework



Source: *(3)*

The six building blocks contribute to the strengthening of health systems in different ways. Some cross-cutting components, such as *leadership/governance* and *health information systems,* provide the basis for the overall policy and regulation of all the other health system blocks. Key input components to the health system include specifically, *financing* and the *health workforce*. A third group, namely *medical products and technologies* and *service delivery*, reflects the immediate outputs of the health system, i.e. the availability and distribution of care.

Inevitably, any type of division of a complex construct such as the health system is fraught with problems. This is also true for the framework, which focuses on health sector actions and underplays the importance of actions in other sectors. It does not take into account actions that influence peoples' behaviours, both in promoting and protecting health and the use of health-care services. The framework does not address the underlying social and economic determinants of health, such as gender inequities or education, and also does not deal with the substantial and dynamic links and interactions that exist across each component.

On the other hand, focusing on these separate components helps put boundaries around this complex construct and permits the identification of indicators and measurement strategies for monitoring progress.

Towards a common monitoring and evaluation framework

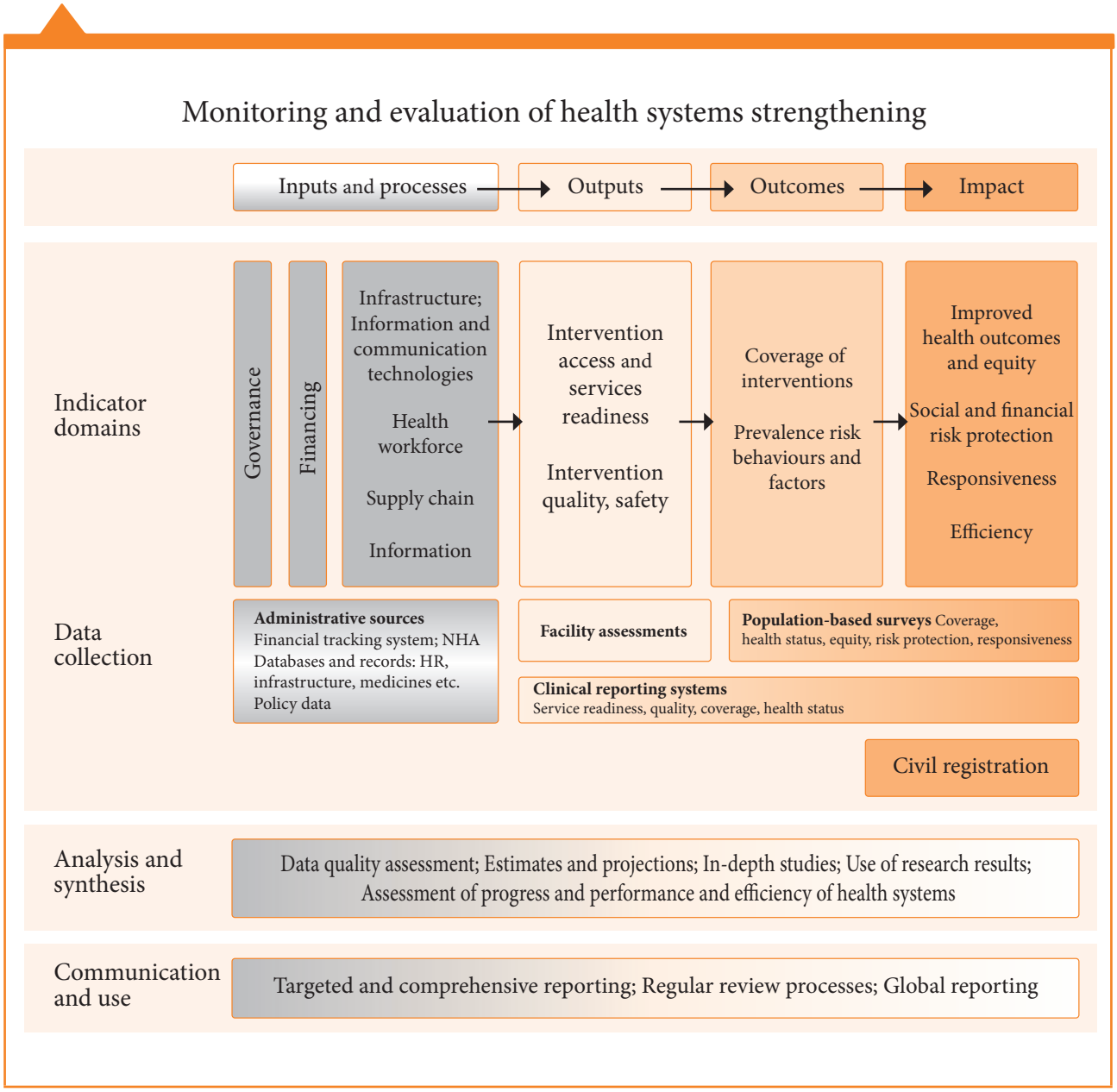
Interest in a common monitoring and evaluation framework was stimulated as a result of the International Health Partnership and related initiatives (IHP+).[4] Launched in September 2007, the IHP+ aims to better harmonize donor funding commitments, and improve the way in which international agencies, donors and developing countries work together to develop and implement national health plans. The IHP+ has developed a common monitoring and evaluation framework to enable targeted monitoring and evaluation of health system strengthening efforts (Figure 2). This framework is country-focused and supportive of country needs while also providing a basis for global monitoring.

4 For more information, visit http://www.internationalhealthpartnership.net/en/home, accessed May 21, 2010.

The monitoring and evaluation framework shows how health inputs and processes (e.g. health workforce and infrastructure) are reflected in outputs (e.g. interventions and available services) that in turn are reflected in outcomes (e.g. coverage) and impact (morbidity and mortality). The added value of the framework is that it brings together indicators and data sources across the results chain in its entirety, i.e. from "inputs/processes", "outputs", and "outcomes", to "impact". It is designed to address monitoring and evaluation needs for different users and multiple purposes, including:

- monitoring of programme inputs, processes and results, required for the management of health system investments;
- health systems performance assessment, as the key for country decision-making processes; and
- evaluating the results of health reform investments and identifying which approaches work best.

Figure 2. Monitoring and evaluation of health systems strengthening



Source: *(4)*

Scope of this handbook

The handbook discusses each building block separately according to a common format, with the medical products, vaccines and technologies building block focusing specifically on access to essential medicines. For each component or building block, the handbook identifies a parsimonious set of indicators and related measurement strategies. This handbook does not address the measurement strategies and indicators across the entire results chain of the common monitoring and evaluation framework. Rather, it focuses on systems "inputs," "processes" and "outputs" as they relate to each of the six building blocks of health systems.

The indicators were initially identified by a small working group consisting of agency representatives and technical experts and then subsequently shared more broadly with country experts, and supported with case-studies and reviews of country experiences. The handbook describes indicators, measurement approaches and strategies that:

- permit the establishment of country health system statistical profiles;
- permit the monitoring of health systems and guides country and partner investments;
- highlight gaps in terms of data availability and quality, pointing to needed investments in measurement strategies; and
- contribute to a global consensus on how to monitor and benchmark health systems strengthening.

In view of the dynamic interlinkages and cross-cutting nature of the different components, the indicators may also have multiple relevance. For example, availability of data on human resources for health may also be an appropriate measure of core information system functions.

The selection of indicators was guided by the need to detect change and show progress in health systems strengthening. Indicators relate to both the level and distribution of inputs and outputs. While the focus is on low- and middle-income countries, experiences from high-income countries are also used to guide the development of measurement systems.

Health systems are complex and their performance and impact are difficult to capture using only quantitative indicators. A complete report of health system performance must ensure that quantitative indicators are complemented by qualitative information; however, this topic is not addressed in this handbook.

Structure and content of the handbook

The handbook is divided into six sections, each of which covers one health system component or building block and is set out along the following lines:

- introduction to the component and related indicators;
- description of possible sources of information and available measurement strategies;
- proposed "core indicators", supplemented, where necessary, by additional indicators that may be used depending on the country health system attributes and needs.

A summarized list of core indicators for monitoring each health system component or building block is presented as an Annex at the end of this section.

In the sections on *leadership/governance*, *service delivery* and *information systems*, composite indices, derived from a selection of system indicators, are presented. These cover both core and additional indicators, reflecting the scope and the complexity involved in trying to measure multiple subsystem components. Issues related to improving data availability and quality, with consideration of the investments that may be needed, are also presented in the *service delivery* and *health workforce* sections.

Core principles guiding the use of this handbook

When working with countries to measure and compare health systems functioning, it is important to strike a good balance between avoiding blueprints that do not allow for country contexts and specificities while also encouraging a degree of standardization that enables comparisons within and between countries as well as over time. Standardized indicators allow comparisons between countries and can help mutual learning, including the identification of bottlenecks and the sharing of lessons learnt. In general, however, measurement should be attuned to a country's health strategy objectives. Each section has proposed core indicators that all countries are encouraged to collect, plus a wider set of indicators that users can choose or modify as needed. It is anticipated that the core indicators will enable the production of country "dashboards" that contain the instruments by which health systems trends can be regularly monitored and compared. Countries should integrate new indicators with existing indicators of their health sector and statistical strategies and plans. Health systems monitoring should also be seen in the context of the indicators' impact on access to priority health services and their contribution to reaching the Millennium Development Goals (MDGs).

A number of the proposed indicators require disaggregation by sub-populations or units, e.g. by sex, age or location. Often such sub-analyses are country specific. Continued research and knowledge generation is needed to inform and generate evidence that would help in understanding the actual meaning of trends in an indicator's value.

Strategies and investments for improving data availability and quality

Responsibilities for effective data generation go beyond that of ministries of health and involve other bodies, such as departments and agencies that handle health-related data, including national statistics offices, ministries of education, among others. There is a need for a strong coordinating body that brings together the various stakeholders and helps ensure the development of a comprehensive and integrated plan for health information and statistical system development. Such a plan should provide the basis for enhanced alignment and harmonization of technical and financial support from the development partners. The Health Metrics Network (HMN) framework has set out standards for information system components and data management *(5)*.

Having poor or unreliable data creates long-term costs and unforeseen effects that are high compared with the costs and benefits of having good data. Practical and generally affordable strategies exist for generating timely and reliable data on health systems, but appropriate investment is needed to develop the capacity to collect, manage, analyse, disseminate and use the obtained information. Further work on the costs of generating data required for monitoring health systems strengthening is needed.

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Annex

Table: List of recommended core indicators

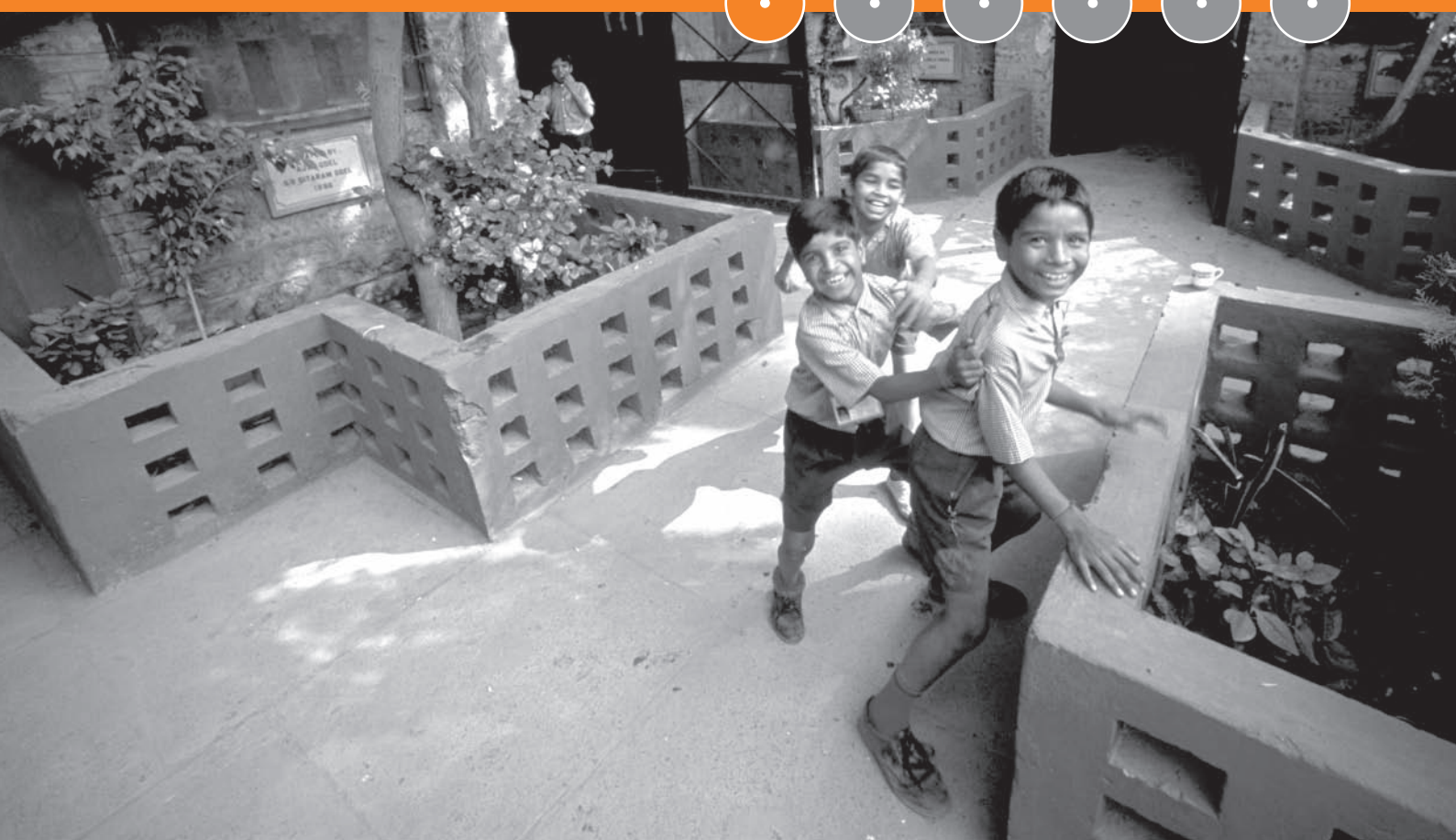
Building blocks and indicators	Data collection methods / Data sources
1. Health Service Delivery	
• Number and distribution of health facilities per 10 000 population • Number and distribution of inpatient beds per 10 000 population	District and national databases of health facilities. Special efforts — notably facility censuses — are often required to obtain the number of private facilities, especially if no registration system is enforced.
• Number of outpatient department visits per 10 000 population per year	Routine health facility reporting system Population-based surveys
• General service readiness score for health facilities • Proportion of health facilities offering specific services • Number and distribution of health facilities offering specific services per 10 000 population • Specific-services readiness score for health facilities	Health facility assessments
2. Health Workforce	
• Number of health workers per 10 000 population • Distribution of health workers by occupation/specialization, region, place of work and sex	Routine administrative records, periodically validated and adjusted against data from national population census or facility-based assessments.
• Annual number of graduates of health professions educational institutions per 100 000 population, by level and field of education	Routine administrative records from individual training institutions. In some cases, data may be validated against registries of professional regulatory bodies where certification or licensure is required for practice.
3. Health Information	
• Health information system performance index	Review of national health information systems

Continues...

Continued

4. Essential Medicines	
• Average availability of 14 selected essential medicines in public and private health facilities • Median consumer price ratio of 14 selected essential medicines in public and private health facilities	National (or sub-national when necessary) surveys of medicine price and availability conducted using a standard methodology developed by WHO and Health Action International.
5. Health Financing	
• Total expenditure on health • General government expenditure on health as a proportion of general government expenditure (GGHE/GGE)	National Health Accounts (NHA)
• The ratio of household out-of-pocket payments for health to total expenditure on health	Household expenditure and utilization surveys.
6. Leadership and Governance	
Policy index	Review of national health policies in respective domains (such as essential medicines and pharmaceutical, TB, malaria, HIV/AIDS, maternal health, child health/ immunization).

1. Health service delivery



1.

Health service delivery

1.1 Introduction

Strengthening service delivery is crucial to the achievement of the health-related Millennium Development Goals (MDGs), which include the delivery of interventions to reduce child mortality, maternal mortality and the burden of HIV/AIDS, tuberculosis and malaria. Service provision or delivery is an immediate output of the inputs into the health system, such as the health workforce, procurement and supplies, and financing. Increased inputs should lead to improved service delivery and enhanced access to services. Ensuring availability of health services that meet a minimum quality standard and securing access to them are key functions of a health system.

To monitor progress in strengthening health service delivery, it is necessary to determine the dimensions along which progress would be measured. Box 1.1 sets out eight key characteristics of good service delivery in a health system. These ideal characteristics describe the nature of the health services that would exist in a strong health system based on primary health care, as set out in the 2008 World Health Report *(1)*.

The process of building evidence for the strengthening of health service delivery must therefore proceed alongside efforts to restructure service delivery in accordance with the values reflected in Box 1.1. Health sector leaders and policy-makers who are tasked with assessing their health systems should participate in the process to deliberate on ways to assess these key characteristics in their countries. Researchers should continue to experiment with methods and measures that would allow progress to be assessed over time, along these important dimensions.

For some of the dimensions of service delivery, such as quality of care, widely accepted methods and indicators for assessment are available, although research to refine these continues. For other characteristics in the list, such as person-centredness, research and dialogue on what and how to measure it is in the early stages.

Some concepts that have frequently been used to measure health services remain extremely relevant and are part of the key characteristics. For example, terms such as access, availability, utilization and coverage have often been used interchangeably to reveal whether people are receiving the services they need *(2, 3)*. *Access* is a broad term with varied dimensions: the comprehensive measurement of access requires a systematic assessment of the physical, economic, and socio-psychological aspects of people's ability to make use of health services. *Availability* is an aspect of *comprehensiveness* and refers to the physical presence or delivery of services that meet a minimum standard. *Utilization* is often defined as the quantity of health care services used. *Coverage* of interventions is defined as the proportion of people who receive a specific intervention or service among those who need it.

Box 1.1: Key characteristics of good service delivery

Good service delivery is a vital element of any health system. Service delivery is **a fundamental input to population health status**, along with other factors, including social determinants of health. The precise organization and content of health services will differ from one country to another, but in any well-functioning health system, the network of service delivery should have the following ***key characteristics.***

1. **Comprehensiveness:** A **comprehensive range** of health services is provided, appropriate to the needs of the target population, including **preventative, curative, palliative** and **rehabilitative** services and **health promotion** activities.
2. **Accessibility:** Services are directly and permanently accessible with no undue barriers of cost, language, culture, or geography. Health services are **close to the people, with a routine point of entry to the service network at primary care level** (not at the specialist or hospital level). Services may be provided in the home, the community, the workplace, or health facilities as appropriate.
3. **Coverage:** Service delivery is designed so that all people in a **defined target population** are covered, i.e. the sick and the healthy, all income groups and all social groups.
4. **Continuity:** Service delivery is organized to provide an individual with **continuity of care across the network of services, health conditions, levels of care, and over the life-cycle.**
5. **Quality:** Health services are of high quality, i.e. they are **effective, safe, centred on the patient's needs** and given in a **timely** fashion.
6. **Person-centredness:** Services are **organized around the person, not the disease** or the financing. Users perceive health services to be responsive and acceptable to them. There is **participation** from the target population in service delivery design and assessment. People are partners in their own health care.
7. **Coordination: Local area health service networks are actively coordinated**, across types of provider, types of care, levels of service delivery, and for both routine and emergency preparedness. The patient's primary care provider facilitates the route through the needed services, and works in collaboration with other levels and types of provider. Coordination also takes place with other sectors (e.g. social services) and partners (e.g. community organizations).
8. **Accountability and efficiency:** Health services are **well managed** so as to achieve the core elements described above with a **minimum wastage** of resources. Managers are allocated the necessary authority to achieve planned objectives and held **accountable for overall performance and results.** Assessment includes appropriate mechanisms for the participation of the target population and civil society.

This section of the handbook focuses particularly on the physical availability of services, which may serve as a starting point for determining methods to improve service delivery. It presents the measurement strategies and indicators for monitoring as well as the "inputs", "processes" and "outputs" to the health system as they relate to the service delivery building block (see Figure 2 in the Introduction section).

Service delivery monitoring has immediate relevance for the management of health services, which distinguishes this area from other health systems building blocks. Shortage of medicines, uneven distribution of health services, and the poor availability of equipment or guidelines must all be taken into account as part of basic service management.

1.2 Sources of information on health service delivery

There are multiple sources of data on health service delivery. These include routine facility reporting systems, health facility assessments (both facility censuses and surveys), and other special studies. No single method provides all the information required to assess service delivery, and multiple methods are needed to understand it completely. The strengths and limitations of the different methods are summarized in Table 1.1 and discussed below.

Routine health facility reporting system

A routine facility reporting system, often referred to as a Health Management Information System (HMIS), is generally used to monitor service delivery. Service data are generated at the facility level and include key outputs from routine reporting on the services and care offered and the treatments administered. Reporting may include supervisory or clinic-reported data on medicine stock-outs in a defined reference period (e.g. during the last month), functioning of outreach services and availability of health workers. Because the data are routinely collected (often monthly or quarterly), it provides information on a continuous basis for time and seasonal trend analyses.

The problems associated with developing service coverage estimates from facility data relate to completeness and accuracy of recording and reporting as well as biases arising from differences in use of services by different populations. In general, routine facility reporting systems give only limited information on the status of service delivery. In many settings, the HMIS often covers only public sector facilities (which may include not-for-profit facilities).

Table 1.1 Summary of main methods of collecting data on service delivery

Data collection method	Description	Strengths	Limitations
Routine health facility reporting system	Regular facility data reported to regional and national levels by service providers	Mandated practice at the facility level with standard reporting formats and cycles	Limited data on service provision; often incomplete, covers public sector only, and with time lags in reporting; biases due to variation in population use of services
Health facility census	Periodic census of all public and private health-care facilities within a country	Provides information useful to planners at all levels, such as basic characteristics (ownership, facility type, coordinates), availability and functionality of basic infrastructure, staffing, service provision and general status	Time-consuming and can become costly, if not well integrated; difficult to identify all health-care facilities, particularly in urban centres where smaller private practices may be more common; access to all facilities may be problematic
Health facility survey	Periodic survey of a representative sample of public and private health-care facilities within a country	More detailed information than in facility census with verification of information in many cases; quality of care	Time-consuming and costly; information most useful at national level; requires a complete facility listing for sampling to be done correctly; long intervals between surveys

Hospital records are the basis for statistics on performance related to inpatient activities, including the numbers of beds, admissions, discharges, deaths and the duration of stay. Outpatient records are the basis for utilization data. As with other routine facility reporting, problems arise from incomplete and late reporting as well as from biases resulting from differences in population use of services.

Health facility assessments

Health facility assessments provide externally generated information either through interviews and/or observation for data collection. Health facility assessments can be implemented as a census (i.e. assessment of all facilities in a district or country) or by using a sample survey approach (i.e. a sample of facilities are selected and assessment).

Facility census

A facility census includes visits to *all* public and private health facilities in a defined area (can be national in scope or sub-national, covering one or more provinces, regions or districts). It is designed to form the basis for a national and sub-national monitoring system of service delivery. The key output is a national database, and where possible, district databases of health facilities. The database should be updated on a regular basis, e.g. every 3–4 years. Once a reliable database system (that can be used at the district level) is in place, the census can be carried out by district teams as part of their regular supervision, with a quality control component provided by regional teams.

The World Health Organization (WHO) service availability and readiness assessment methodology provides a standard health facility assessment questionnaire to assess, map and monitor service availability and readiness *(4)*. It is designed to support a health facility census with a focus on the core functional capacities and availability of services. The instrument can be further adapted at the country level to respond to specific country contexts. If resources are limited and do not allow for visiting all health facilities in a country (or sub-nationally in a district, region, or province), a census can be implemented in sentinel districts with additional districts added each year, to achieve a full census over a longer time period.

The key topic areas and core functional capacities of a facility census of service availability and readiness include:

- Identification, location and managing authority of health facility (public and private)
- Facility infrastructure and amenities, such as availability of water supply, telecommunications and electricity
- Basic medical equipment, such as weighing scales, thermometer and stethoscope
- Availability of health workforce (e.g. cadre of human resources, staff training and guidelines)
- Drugs and commodities — availability of general medicines
- Diagnostic facilities — availability of laboratory tests (e.g. HIV, malaria, tuberculosis (TB), others)
- Standard precautions on prevention of infections — availability of general injection and sterilization, disposal and hygiene practices
- Specialized services, such as family planning, maternal and newborn care, child health, HIV/AIDS, tuberculosis, malaria and chronic diseases.

Facility censuses also serve as an independent source for numbers of health workers, which may be compared with those from other sources and analysed in conjunction with them. Additional particulars, such as the presence of workers on the day of the visit, can also be gathered. Comparisons between districts and regions provide valuable evidence about the distribution of services within a country. Information on minimum standards can be used for key services to provide feedback to programme planners.

The identification of all facilities, however, is a major challenge. Small private facilities are more likely to be missed, and special efforts have to be made to include them, especially in urban areas. Completeness is likely to improve with subsequent rounds of censuses. Other sources, such as household surveys in which respondents are asked which facilities they utilize, may be used to identify more centres. Obtaining access to private facilities for the brief interview can pose another challenge.

A facility census can only check on the basic elements of service quality. In general, no data are collected on patient satisfaction or knowledge and practices of health workers, as this would be very time-consuming and costly. Thus, quality ascertainment could only be achieved through facility surveys and further in-depth assessments.

Facility surveys

A general facility survey usually focuses on a wide range of key health services and collects information on facility infrastructure, equipment and supplies, support systems, management systems and providers' adherence to standards.

Facility surveys may also measure the quality of specific services and whether all required elements are present to provide routine care; for example, immunization and diarrhoea treatment in the survey of child health services. The core questionnaire reflects generally accepted standards for health-care services, including United Nations Children's Fund (UNICEF) immunization guidelines and standards set by the Safe Motherhood initiative, with local adaptations as necessary.

The United States Agency for International Development (USAID) and Macro International Inc. have developed a comprehensive facility survey instrument called Service Provision Assessment.[1] The survey is conducted in a nationally representative sample of health facilities (often exceeding 400 facilities, stratified by type) to provide information on the characteristics of health services, including their quality, infrastructure, utilization and availability. The assessment covers all types of health service sites, from hospitals to health posts, including public and private institutions. Data collection includes facility resources audit, provider interviews, client–provider observations and client exit interviews. Another example of a comprehensive facility assessment is the "balanced scorecard" in Afghanistan used to monitor the scale-up of health services *(5, 6)*, as described in Box 1.2.

Box 1.2 Facility survey with a balanced scorecard, Afghanistan

A "balanced scorecard" approach was developed in Afghanistan to monitor the scale-up of health services. The assessment relies on a facility survey, including health worker interviews, client–provider observations and exit interviews to assess the perception of quality and satisfaction with services.

Six domains and 29 indicators were used and monitored through annual surveys during 2004–2006. The domains included patients and community (e.g. patient satisfaction), staff (e.g. salary payments), capacity for service provision (e.g. equipment functionality, medicine availability, training intensity, and infrastructure), service provision (e.g. proper sharps disposal and outpatient visits per month), financial systems (e.g. user fee guidelines and exemptions for poor patients) and overall vision (e.g. outpatient department visit concentration index).

The objective of a facility survey is not to provide information on the strengths and weaknesses for specific facilities, but to identify the strengths and weaknesses in health systems. The findings can be used to measure changes in the systems put in place to support quality services and adherence to standards. The facility survey presents information not only on the availability of services, but also on measures of quality.

1 http://www.measuredhs.com/aboutsurveys/spa/start.cfm

One of the disadvantages of the facility survey, however, is the cost of obtaining extensive information whose relevance is only at the national level. The extensive data collection efforts in each facility provide a wealth of information on hundreds of indicators, but a much smaller number of indicators matter for policy-making. Moreover, the utility of the information on the quality of care is hampered by the bias inherent in exit surveys, which are by their nature limited to recent users of care and do not constitute a population-based sample.

1.3 A service delivery monitoring system

Given the strengths and weaknesses of each data source, it is clear that no single source can provide sufficient information for monitoring service delivery. Thus, a service delivery monitoring system would need to rely on multiple sources of data to be brought together for analysis and decision-making. Data from routine health facility reporting systems need to be supplemented with data from health facility assessments. The topics included in these assessments will vary over time and the questionnaire should use a modular approach selected on the basis of current priorities and needs. In addition, data generated through facility assessments should be complemented or cross-checked with data from other sources, such as the databases of health workers, infrastructures, equipment and procurement, that are often available in various departments of the ministries of health. This can serve as a complementary or benchmarking material for data on service delivery generated through the routine HMIS.

Information, regardless of the source, should preferably be collected and made available at the district level. Ideally, the foundation of a system of monitoring health resources lies at the district level, as it provides information required for decision-making. Therefore, establishing a district-based system is the primary goal with support at the national or regional/provincial levels. In the context of decentralization, provinces are often given the responsibility for monitoring and evaluation, but little investment is made to assist them in carrying out this role. By investing at the provincial level, an independent monitoring system that provides essential data for the district level and allows comparison between districts can be set up.

1.4 Core indicators

Countries have often defined their own set of performance measures in the area of service delivery. The challenge is to devise a set of sensitive and specific indicators that can easily be collected at all facilities at relatively little cost, and with the possibility of becoming part of regular facility reporting systems.

This section lists a small set of service delivery indicators focused on low-income and lower middle-income countries (Table 1.2). The purpose of this set is to monitor the strength of the health system over time. Although in some a single tracer condition may suffice for monitoring purposes, it is generally important to bring together a range of indicators to summarize the overall situation; thus summary measures or indices are useful. The indicators listed below can be grouped into those that reflect *general service availability, general service readiness, and service-specific availability and readiness.*

Table 1.2 Summary of proposed core indicators to monitor service delivery

Core Indicators	Data collection method
General service availability	
1a Number and distribution of health facilities per 10 000 population	National database of health facilities (often requiring facility censuses)
1b Number and distribution of inpatient beds per 10 000 population	
1c Number of outpatient department visits per 10 000 population per year	Routine health facility reporting system Population-based surveys
General service readiness	
2a General service readiness score for health facilities	Health facility assessments
Service-specific availability	
3a Proportion of health facilities offering specific services	Health facility assessments
3b Number and distribution of health facilities offering specific services per 10 000 population	
Service-specific readiness	
4a Specific-services readiness score for health facilities	Health facility assessments

1.4.1 General service availability

General service availability refers to the physical presence of delivery of services that meet a minimum standard. Availability comprises health infrastructure (facilities and beds per 10 000 population), the health workforce per 10 000 population and aspects of service utilization (inpatient/outpatient visits per 10000 population).

Recommended indicator 1a: Number and distribution of health facilities per 10 000 population

Definition

The number of health facilities available relative to the total population for the same geographical area.

- *Numerator*: the number of health facilities, i.e. all public and private health facilities, defined as a static facility (a designated building) in which general health services are offered. It does not include mobile service delivery points and non-formal services, such as traditional healers.
- *Denominator*: the total population for the same geographical area.

Data collection methodology

District and national databases provide the number of public facilities, often by type (such as hospital, health centre, health post, dispensary). Special efforts, notably facility censuses, are often required to obtain the number of private facilities, especially if no registration system is enforced. A facility sample survey will not provide the data needed to compute service availability.

Comparability issues

The size of health facilities may vary considerably and affect comparisons. When smaller geographical units, such as districts are analysed, the population does not necessarily use the facilities in the designated area. Comparisons of densities between districts have to be made cautiously.

Periodicity

Annual updating of the number of facilities, and validation every 3–5 years through a complete census.

Complementary dimensions

Distribution implies urban–rural differences and could also include differences between regions or provinces, or sometimes between districts. Since the population size of districts tends to be small, comparisons of densities between districts have to be made cautiously.

Additional information can be presented based on the managing authority of health facilities: public, private not-for-profit (including faith based), private for profit, and other (such as parastatals).

Recommended indicator 1b: Number and distribution of inpatient beds per 10 000 population

Definition

The number of inpatient beds available relative to the total population for the same geographical area.

- *Numerator*: the number of inpatient beds. This includes total hospital beds (for long-term and acute care), maternity beds and paediatric beds, but not delivery beds. Public and private sectors are included.
- *Denominator*: the total population for the same geographical area.

Data collection methodology

District and national databases provide the number of beds. Special efforts, notably facility censuses, are often required to obtain the number of beds in private facilities, especially if no registration system is enforced.

Comparability issues

When smaller geographical units, such as districts are analysed, the population does not necessarily use the facilities in the designated area. Comparisons of densities between districts have to be made cautiously.

Periodicity

Regular updating of the number of beds in facilities, and validation every 3–5 years through a complete census.

Complementary dimensions

Distribution implies urban–rural differences and could also include differences between regions or provinces, or sometimes between districts.

Additional information about beds can be presented based on the managing authority of health facilities: public, private not-for-profit (including faith based), private for profit, and other (such as parastatals).

Data on maternity beds can also be used to calculate the density of maternal beds per 1000 pregnant women per year.

Indicators of service availability cannot, of course, accurately reflect access to services. True indicators of access need to measure the proportion of the population living within a specified travel time and/or distance from a health facility. Access is sometimes measured through household surveys which rely on respondent judgment or on basic spatial analysis of catchment areas around specified facilities. However, the latter is subject to weaknesses. For example, designing catchment areas around health facilities (e.g. a 5 km or 10 km

buffer) without considering the capacity of each health facility and logistic constraints for patients, provides only a rough estimate of physical access. Moreover, such calculations require data on the global positioning system coordinates of all service delivery points and population data for small geographical areas. Only a limited number of countries are conducting such analyses on a regular basis. In addition, problems arise when patients use facilities that lie outside the immediate catchment area, which could be due to number of reasons including the logistics of travel, sociocultural preferences and perceptions of quality. Urban areas present a particular challenge because although physical proximity may pose less of a problem, issues of affordability and acceptability become more important obstacles to access.

Recommended core indicator 1c: Number of outpatient department visits per 10 000 population per year

The patient volumes at inpatient and outpatient facilities are not a coverage indicator because the population in need is not well defined. Low rates, however, are indicative of poor availability and quality of services. For example, several countries have demonstrated that outpatient department rates go up when constraints to using health services are removed, such as by bringing services closer to the people or reducing user fees. In contrast, once rates exceed an uncertain threshold the number of visits is no longer an indicator of the strength of the health services.

Definition

The number of outpatient visits to health facilities relative to the total population of the same geographical area

- *Numerator:* the number of visits to health facilities for ambulant care, not including immunization (can be divided into children under five years of age and aged five years and over).
- *Denominator:* the total population for the same geographical area

Data collection methodology

- Routine health facility reporting system
- Population-based surveys

Comparability issues

The accuracy and completeness of reporting need to be consistent over time and between populations to allow assessment of trends and comparisons.

Periodicity

Annual statistics.

Complementary dimensions

Disaggregation by district or province/region can be presented.

Potential additional indicators of inpatient care and utilization include admission rates (number of new admissions per 10 000 population per year) and number of caesarean sections per 100 deliveries. Both indicators tend to vary considerably, however, with country practices and changes in admission or intervention policies. Very low rates tend to indicate that services are not available, but otherwise the statistics are difficult to interpret.

Two related indicators are:

1. Average length of stay: an indicator of quality and efficiency of health services.
2. Bed occupancy rate: an indicator of efficiency of services.

1.4.2 General service readiness

General service readiness refers to the general capacity of health facilities to provide health services. Readiness is defined as the cumulative availability of components required to provide services. It comprises tracer items for the following major domains: infrastructure/amenities, basic supplies/equipment including small surgery, standard precautions, laboratory tests, medicines and commodities.

Recommended core indicator 2a: General service readiness score for health facilities

Estimation of general service readiness is derived from data on availability and functioning of tracer items in the facility on the day of assessment. These items are grouped in five domains (see Table 1.A.1 in the Annex to this section).

Definition

Cumulative availability of components required in health facilities to provide general services, expressed as percentage. The overall score is the unweighted average of domain scores. Each domain score represents the average number of items present and functioning in the health facilities, expressed as a percentage of the total number of items in that domain.

Data collection methodology

Health facility assessments using a standardized questionnaire to assess the availability and functioning of the tracer items in each domain of general service readiness (e.g. WHO core tool for Service Availability and Readiness Assessment).

Comparability issues

Definitions and data collection should be standardized.

Periodicity

The basic state of facilities should be an important input into annual health sector reviews and monitored annually at the national level through sample surveys. Districts may use the index as a management tool.

Complementary dimensions

Scores for the different domains of general service readiness should be presented separately. All scores can be presented by district and by ownership of facilities.

Hospitals provide a wide range of services and an expanded version of the questionnaire should be administered during facility assessment, or regular reporting.

1.4.3 Service-specific availability

Service-specific availability refers to whether or not a specific service is offered. Availability is captured by the proportion of services offering a specific service and the density of the facilities offering the service per 10 000 population.

Specific services may include family planning, antenatal care, safe delivery, child health, HIV/AIDS, tuberculosis, malaria, chronic conditions and small surgery.

Recommended core indicator 3a: Proportion of health facilities offering specific services

Recommended core indicator 3b: Number and distribution of health facilities offering specific services per 10 000 population

Definition

Proportion of health facilities ready to provide key services: The number of facilities that offer specific services relative to the total number of facilities.

Number and distribution of health facilities ready to provide key services per 10 000 population: The number of facilities that offer specific services relative to the total population in the same geographical area.

- *Numerator:* the number of facilities in which a specific service is offered.
- *Denominator:* the total number of facilities (to obtain the proportion), or, the total population for the same geographical area (to compute the density)

Data collection methodology

Health facility assessments using a standardized questionnaire to assess the availability and functioning of the components required to meet the key service capacity standards.

Comparability issues

Definitions and data collection should be standardized. When using indices, the results for the specific components should be specified.

Periodicity

The state of facilities should be monitored annually at the sub-national level as a management tool. National statistics should be updated every 2–3 years through regular reporting by districts; and sample surveys and a census once every 3–5 years to validate all information.

Complementary dimensions

Distribution implies urban–rural differences and could also include differences between regions or provinces, or sometimes between districts.

1.4.4 Service-specific readiness

Service-specific readiness refers to the capacity of health facilities to provide a specific service, measured through the presence of tracer items that include trained staff, guidelines, equipment/supplies, diagnostic capacity, medicines and commodities. The main challenge is to develop a concise set of items for each domain

so that all programmes can be monitored through a single data collection mechanism. Recommended tracer items to monitor readiness to deliver specific services are presented in Table 1.A.2 in the Annex to this section.

Recommended core indicator 4: Service-specific readiness score for health facilities

Definition

Cumulative availability of components required in health facilities to deliver specific services, expressed as percentage. The overall score for a specific service is the unweighted average of number of items present and functioning, expressed as a percentage of the total number of items in that service.

Data collection methodology

Health facility assessments using a standardized questionnaire to assess the availability and functioning of the tracer items in each service provided.

Comparability issues

Definitions and data collection should be standardized.

Periodicity

The basic state of facilities should be an important input into annual health sector reviews and monitored annually at the national level through sample surveys. Districts may use the index as a management tool.

Complementary dimensions

Scores for the different domains of general service readiness should be presented separately. All scores can be presented by district and by ownership of facilities.

Hospitals provide a wide range of services and an expanded version of the questionnaire should be administered during facility assessment, or regular reporting.

1.4.5 Service quality

Assessing quality of care can be difficult because it can cover both the complex processes of evaluating, diagnosing and treating a patient as well as the outcomes of that treatment for the patient. In most definitions, quality of care is seen to be multidimensional: care is said to be of high quality if it is effective, safe, centred on the patient's needs and given in a timely fashion.

A wide range of quality indicators is presented in Table 1.A.3 in the Annex to this section, but measurement and monitoring are major challenges. The Organisation for Economic Co-operation and Development (OECD) has identified 13 indicators that could be used in several of its countries to assess the quality of health-care delivery (7). Most of these indicators are related to health outcomes or coverage of interventions, e.g. six indicators on cancer screening and survival ratios (breast, cervical and colorectal cancer) and three on vaccination (coverage, impact). Waiting time to intervention for femur fractures and inpatient 30-day case fatality rates for acute myocardial infarction and stroke are indicators that are more directly related to service organization and quality. The USAID-sponsored Quality Improvement Project has examined a range of quality data in developing countries relevant to compliance with specific care standards as well as outcome indicators such as case-fatality rates for specific diseases, e.g. diarrhoeal disease or measles. WHO has worked the world over as

part of its IMCI programme to assess the level of compliance with the IMCI algorithm, specifically in areas of assessment and treatment protocols. Many countries are examining the use of admission rates for conditions, such as asthma and diabetes, that are readily manageable in the primary care setting.

In many parts of the world, data on quality of care are very difficult to obtain. However, death registers and reviews of mortality for case-fatality rates are feasible sources of information in many settings. Admission rates for certain conditions amenable to care in the primary care setting are also available. Other sources of data include:

Quality assurance practices

- Supervisory checklist for health services: presence of equipment and completeness of HMIS accounts, and other process indicators
- Supervisory checklist for health service provision: contents in the client assessments, treatments or consultations
- Facility-wide review of mortality: structured system to review the records of each death
- Audits of medical records or registers: checking if protocols are followed.

Supportive management practices

- Facility supervisory visit in last six months
- Report of provider receiving routine pre-service or in-service training, personal supervision.

Funding mechanism

- Routine user fee for adult curative care
- Any external source for reimbursement (insurance, employers, charity).

Logistics

- Adequate system for monitoring temperature of vaccine stock: functioning thermometer in refrigerator, up-to-date temperature chart, temperature 0–8°C at the time of survey
- Vaccine stock: no expired items, items stored by expiration date, up-to-date inventory available
- The DELIVER Project's Logistic Information Assessment Tool has developed a core set of indicators with data available for many countries *(8)*.

Good storage and stock monitoring systems for medicines (contraceptives)

- Good storage conditions: dry location, off the ground, protected from water, sun, pests and rodents
- Adequate stock monitoring: no expired items, items stored by expiration date, up-to-date inventory available.

Selected tools

Profiles of health facility assessment methods. Report of the International Health Facility Assessment Network (IHFAN). Arlington, VA, MEASURE Evaluation/USAID, 2008 (http://www.cpc.unc.edu/measure/publications/pdf/tr-06-36.pdf, accessed 11 June 2010).

This document profiles four instruments used for health facility assessment, and specifies their management utility. The instruments included are Service Provision Assessment, Facility Audit of Service Quality, Health Facility Census, and Service Availability Mapping.

Health systems assessment approach: a how-to manual. Bethesda, MD, Health Systems 20/20 (http://www.healthsystems2020.org/content/resource/detail/528/, accessed 11 June 2010).

This manual is designed to provide a rapid yet comprehensive assessment of a country's health system. The approach covers key health systems functions and is organized around seven technical modules, which guide data collection and assessment, including that of service delivery.

World Health Organization. Service availability and readiness assessment methodology, forthcoming (http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/, accessed 30 August 2010)

The *service availability and readiness assessment methodology* is a standard health facility assessment methodology developed by WHO to assist countries to assess, map and monitor services availability and readiness at health facility levels (including hospitals, health centres, pharmacies and laboratories). The tool is implemented in countries to help create a baseline database of all public and private health facilities and services across the country or in sentinel districts, to form the basis for a national and sub-national routine monitoring system of service delivery.

Further reading

Kelley E, Hurst J. *Health Care Quality Indicators Project conceptual framework paper.* Paris, Organisation for Economic Co-operation and Development, 2006 (OECD Health Care Working Papers, No. 23, DELSA/HEA/WD/HWP(2006)3; http://www.oecd.org/dataoecd/1/36/36262363.pdf, accessed 11 June 2010).

USAID. *Logistics indicators assessment tool (LIAT).* Arlington, VA, USAID DELIVER Project, 2008 (http://deliver.jsi.com/dhome/topics/monitoring/monitoringpubs/meresources/metools, accessed 11 June 2010).

USAID. *Assessment tool for laboratory services (ATLAS) 2006.* Arlington, VA, DELIVER for the United States Agency for International Development, 2006 (http://deliver.jsi.com/dhome/topics/monitoring/monitoringpubs/meresources/metools, accessed 11 June 2010).

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3. Shenghelia B, et al. Beyond access and utilization: defining and measuring health system coverage. In: Murray CJL, Evans DB, eds. *Health systems performance assessment: debates, methods and empiricism.* Geneva, World Health Organization, 2003:221–235.
4. *Service Availability Mapping (SAM) (assessment tool and country reports). Geneva, World Health Organization (http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/, accessed 26 July 2010).*

5. Peters DH, et al. A balanced scorecard for health services in Afghanistan. *Bulletin of the World Health Organization,* 2007, 85:146–151.
6. Hansen PM, et al. Measuring and managing progress in the establishment of basic health services: the Afghanistan health sector balanced scorecard. *International Journal of Health Planning and Management.* 2008, 23:107-17.
7. Mattke S, et al. and the HCQI Expert Group Members. *Health Care Quality Indicators Project initial indicators report.* Paris, Organisation for Economic Co-operation and Development, 2006 (OECD Health Care Working Papers, No. 22; http://www.oecd.org/dataoecd/1/34/36262514.pdf, accessed 25 April 2010).
8. USAID DELIVER Project. *Description of indicators.* Arlington, VA, John Snow Inc. for USAID, 2002 (http://deliver.jsi.com/dhome/topics/monitoring/monitoringpubs/meresources/metools, accessed 10 June 2010)

Annex

Table 1.A.1 Tracer items for assessment of general service readiness

Domain	Tracer items
1. Basic amenities	• Power (a grid or functional generator with fuel) • Improved water source within 500 meters of facility • Room with auditory and visual privacy for patient consultations • Access to adequate sanitation facilities • Communication equipment (phone or SW radio) • Access to computer with email/internet • Emergency transport
2. Basic equipment	• Adult scale • Child/infant scale • Thermometer • Stethoscope • Sphygmomanometer and BP cuff • Refrigerator • Light source
3. Standard precautions for prevention of infections	• Sterilization equipment • Storage and disposal of sharps • Storage and safe disposal of infectious wastes • Disinfectant • Sharps box/container • Single use – standard disposable or auto-disable syringes • Soap or hand disinfectant • Latex gloves • Masks • Guidelines for standard precautions
4. Laboratory	• Hemoglobin • Whole blood glucose by glucometer • HIV rapid test • Rapid syphilis test • Malaria rapid test or smear • TB microscopy (by AFT light microscopy) • General microscopy (e.g. wet mounts) • Urine pregnancy rapid test • Urine dipstick
5. Medicines and commodities	• Standard 14 essential medicines (see table 4.1)
Total	**Overall general service readiness index**

Table 1.A.2 Tracer items to monitor readiness to deliver specific services

Services	Tracer items
1. Family planning services	
Staff and training	• Guidelines on family planning
	• Staff trained in FP
Equipment	• Blood pressure machine
	• Stethoscope
Medicines and commodities	• Combined oral contraceptive pills
	• Injectable contraceptives
	• Condoms (male)
2. Antenatal care services	
Staff and training	• Guidelines on ANC
	• Staff trained in ANC
Equipment	• Blood pressure machine
	• Stethoscope
Diagnostics	• Hemoglobin
	• Urine protein
Medicines and commodities	• Iron tablets
	• Folic acid tablets
	• Tetanus toxoid
3. Basic emergency obstetric and newborn care	
Staff and training	• Guidelines for Integrated management of pregnancy and childbirth (IMPAC)
	• Staff trained in IMPAC
Equipment	• Emergency Transport
	• Examination light
	• Suction apparatus
	• Manual vacuum extractor
	• Vacuum aspirator or D&C kit
	• Newborn bag and mask
Medicines and commodities	• Partograph
	• Gloves
	• Antibiotic eye ointment for newborn
	• Injectable uterotonic
	• Injectable antibiotic
	• Magnesium sulphate
	• Intravenous solution with infusion set

Continues...

Services	Tracer items
4. Comprehensive Emergency Obstetric Care (CEmO)	
Staff and training	• Guidelines for CEmOC • Staff trained in CEmOC • Surgeon and anesthetist on staff
Equipment	• Anesthesia equipment • External heat source
Diagnostics	• Blood typing capacity
Medicines and commodities	• No shortage of blood in last three months; blood obtained ONLY from national or regional blood bank OR Blood obtained from other sources but screened for HIV and other transfusion transmissible infections
5. Child health services: routine child immunization	
Staff and training	• Guidelines for EPI • Staff trained in EPI
Equipment	• Cold box with ice packs • Refrigerator
Medicines and commodities	• Syringes and needles • Sharps box • Measles vaccine • DPT-HB vaccine • Polio vaccine • BCG vaccine
6. Child health services: curative care and preventive services including growth monitoring	
Staff and training	• Guidelines for IMCI • Staff trained in IMCI
Equipment	• Child/infant scale • Thermometer • Growth charts
Diagnostics	• Hemoglobin (Hb) • Test parasite in stool • Malaria blood test
Medicines and commodities	• Oral Rehydration Solution packet • Amoxicillin • Co-trimoxazole • Paracetamol • Vitamin A • Me-/albendazole • Zinc

Continues...

Services	Tracer items
7. HIV counseling and testing	
Staff and training	• Guidelines on HIV testing
	• Guidelines on HIV & AIDS counseling
	• Staff trained in HIV testing
	• Staff trained in HIV & AIDS counseling
Equipment	• Visual and auditory privacy
Diagnostics	• HIV diagnostic test
	• Trained HIV/AIDS diagnostic provider
Medicines and commodities	• Condoms
8. HIV/AIDS care and support services	
Staff and training	• Guidelines for clinical management of HIV& AIDS
	• Guidelines for palliative care
	• Staff trained in clinical management of HIV & AIDS
Diagnostics	• System for diagnosis of TB among HIV + clients
Medicines and commodities	• Intravenous solution with infusion set
	• IV treatment fungal infections
	• Cotrimoxazole
	• First-line TB treatment medications
	• Palliative care pain management
	• Condoms
9. HIV/AIDS antiretroviral prescription and client management	
Staff and training	• Guidelines for antiretroviral therapy
	• Staff trained in ART prescription and management
Diagnostics	• Complete blood count (CBC)
	• CD4, Viral Load, or Total Lymphocyte Count (TLC)
	• Blood urea levels
	• Liver function test (LFT)
Medicines and commodities	• All first-line antiretrovirals
10. Preventing mother-to-child transmission (PMTCT) services	
Staff and training	• Guidelines for PMTCT
	• Staff trained in PMTCT
	• Guidelines for infant and young child feeding counseling
	• Staff trained in infant and young child feeding
Equipment	• Visual and auditory privacy
Diagnostics	• HIV diagnostic test for adults
	• Dried blood spot (DBS) filter paper for diagnosing newborn HIV+
Medicines and commodities	• Zidovudine (AZT)
	• Nevirapine (NVP)

Continues...

Services	Tracer items
11. Tuberculosis (TB) services	
Staff and training	• Guidelines for diagnosis and treatment of TB • Guidelines for management of HIV & TB co-infection • Guidelines related to MDR-TB treatment (or identification of need for referral) • Staff trained in TB diagnosis and treatment • Staff trained in management of HIV & TB co-infection • Staff trained in client MDR-TB treatment or identification of need for referral
Diagnostics	• TB smear microscopy • Trained malaria diagnostic provider • HIV Test
Medicines and commodities	• First-line TB medications
12. Malaria services – if relevant*	(*only for high prevalence regions)
Staff and training	• Guidelines for diagnosis and treatment of malaria • Staff trained in malaria diagnosis and treatment • Guidelines for IPT* • Service provider trained in IPT*
Diagnostics	• Malaria diagnostic capacity • Trained malaria diagnostic provider
Medicines and commodities	• At least two first-line antimalarials in stock • IPT drug* • ITN*
13. Chronic Diseases adult treatment and preventive services	
Staff and training	• Guidelines for diabetes diagnosis and treatment • Guidelines for mental health treatment • Guidelines for treatment of chronic cardio-vascular conditions • Staff trained in management of chronic illnesses
Equipment	• Stethoscope • Sphygmomanometer and BP cuff • Adult weight scale
Diagnostics	• Capacity to measure blood glucose
Medicines and commodities	• Enalapril. Tracer drugs: Atenolol (tenormin) 50 mg capsule/tablet; Captopril (capoten) 25 mg capsule/tablet • Beclometasone inhaler. Tracer druges: Salbutamol 0.1 mg/dose inhaler • Metformin tablet. Tracer drugs: Glibenclamide (5 mg capsule/table • Insulin • Amitriptyline 25 mg capsule/tablet

Continues...

Services	Tracer items
14. Minor surgery services	
Staff and training	• Needle holder • Scalpel handle with blade • Retractor • Surgical scissors • Nasogastric tubes 10–16 FG • Tourniquet
Medicines and commodities	• Skin disinfectant • Sutures (both absorbable and non-absorbable) • Ketamine

Table 1.A.3 Sample indicators for consideration in assessing health-care quality

Dimension of care	Indicators	Data source
Effectiveness	Case-fatality rates for specific diseases	Record review
	Hospital admission rate for asthma	Record review
	Percentage of sick child visits during which health worker counseled mother on nutrition	Observation, exit interviews
	Percentage of women aged 40 years and over who reported a mammogram within the past two years	Survey
	Percentage of women who received prenatal care in the first trimester	Record review or survey
Safety	Percentage of providers who know hand hygiene guidelines	Interviews with health workers
	Birth trauma rate in neonate per 1000 live births	Record review
	Percentage of adults whose provider asks about other prescribed medication	Observation, exit interviews
Patient-centredness	Percentage of adults with recent health visit who stated their provider always listened to what they had to say	Exit interviews, household survey
	Percentage of adults with recent health visit who stated their provider explained things clearly	Exit interviews, household survey
	Percentage of adults with recent health visit who stated their provider showed respect to them	Exit interviews, household survey
Timeliness	Percentage of persons who state they have a usual source of care	Survey
	Percentage of emergency department visits where patients left without being seen	Record review
	For heart attack patients, median time to thrombolytic therapy or percutaneous transluminal coronary angioplasty (PTCA)	Laboratory records

2. Health workforce

2.

Health workforce

2.1 Introduction

The ability of a country to meet its health goals depends largely on the knowledge, skills, motivation and deployment of the people responsible for organizing and delivering health services. Numerous studies show evidence of a direct and positive link between the numbers of health workers and population health outcomes (*1, 2*). Many countries, however, lack the human resources needed to deliver essential health interventions for a number of reasons, including limited production capacity, migration of health workers within and across countries, poor mix of skills and demographic imbalances. The formulation of national policies and plans in pursuit of human resources for health development objectives requires sound information and evidence. Against this backdrop of an increasing demand for information, building knowledge and databases on the health workforce requires coordination across sectors. WHO is working with countries and partners to strengthen the global evidence base on the health workforce — including gaining consensus on a core set of indicators and a minimum data set for monitoring the stock, distribution and production of health workers.

The health workforce can be defined as "all people engaged in actions whose primary intent is to enhance health" (*3*). These human resources include clinical staff, such as physicians, nurses, pharmacists and dentists, as well as management and support staff, i.e. those who do not deliver services directly but are essential to the performance of health systems, such as managers, ambulance drivers and accountants (Box 2.1). Presently, comprehensive and robust methodologies are not available for assessing the adequacy of the health workforce to respond to the health-care needs of a given population. However, a shortage of health workers can be perceived from the inadequate numbers and skills mix of people being trained or maldistribution of their deployment, as well as losses caused by death, retirement, career change or out-migration. It has been estimated that countries with fewer than 23 physicians, nurses and midwives per 10 000 population generally fail to achieve adequate coverage rates for selected primary health-care interventions, as prioritized by the MDGs *(3)*.

Box 2.1 Boundaries of the health workforce

Various permutations and combinations of what constitutes the health workforce may exist according to the country's situation and the means of monitoring. Human resources for health include individuals working in the private and public sectors, those working full-time or part-time, those working at one job or holding jobs at two or more locations, and those who are paid or provide services on a voluntary basis. They include workers in different domains of health systems, such as curative, preventive and rehabilitative care services as well as health education, promotion and research. They may also include people with the education and training to deliver health services but who are not engaged in the national health labour market (e.g. if they are unemployed or have migrated or withdrawn from the labour force for personal reasons).

The need for comprehensive, reliable and timely information on human resources for health, including numbers, demographics, skills, services being provided and factors influencing recruitment and retention, has been widely identified at the international, regional and national levels among both resource-poor and wealthier countries. This need has become even more urgent in view of the international effort to scale-up education and training of health workers in 57 countries, mostly in sub-Saharan Africa, which have been identified as having a critical shortage of highly skilled health professionals (*3*).

A health information system with a strong human resources component can help build the evidence base to plan for the availability of required health workers of desired quality in the right place, at the right time. Planning requires knowledge of the numbers and characteristics of health workers who are active in the health sector, of those being trained and added to the human resources pool, and of those leaving the active workforce and their reasons for leaving (*4*, *5*). A comprehensive Human Resources Information System (HRIS) can also guide decision-making to ensure the cultural appropriateness of the health system, such as the appropriate sex and ethnic mix of health workers, especially to encourage utilization of services among underserved or marginalized communities. For example, in some contexts, access to female providers is an important determinant of women's health service utilization patterns (*6*). A strategy for ensuring the male–female balance of the health workforce should include promoting the collection and use of sex-disaggregated data in all human resource assessments.

A timely, reliable and relevant HRIS is essential to support the formulation, monitoring and evaluation of health workforce plans, strategies and policies at the sub-national, national and international levels. Unfortunately, for most countries, there remains a significant lag between the demand for data and the availability and usefulness of the information required to support decision-making.

2.2 Sources of information on the health workforce

Effective monitoring and evaluation of human resources for health in countries requires the development of an agreed core set of indicators and their means of measurement to inform decision-making among national authorities and other stakeholders. Diverse sources that can potentially produce relevant information exist even in low-income countries, such as population-based sources, health facility assessments and routine administrative records (*4, 5, 7–11)*. Each of these sources has its strengths and limitations for health workforce analysis (Table 2.1). In many countries, comprehensive data on human resources are not available in any one repository. This means that any attempt to determine the size and core characteristics of the health workforce requires some level of analysis and synthesis of available information from multiple sources. The use of information from a variety of sources should, in principle, increase the options for measuring and validating core health workforce statistics.

Population censuses and surveys

Many meaningful results pertinent to workforce analysis can be produced through tabulation of population-based data. All countries collect at least some data on their population, mainly in terms of periodical demographic censuses and household sample surveys that produce statistical information about the people, their homes, their socioeconomic conditions and other characteristics. Most censuses and labour force surveys ask for the occupation and place of work of the respondent (and other adult household members) along with other demographic characteristics, including age, sex and education levels.

Table 2.1 Potential sources of data for monitoring the health workforce

Source	Strengths	Limitations
Population census	• Provides nationally representative data on stock of human resources in all health occupations (including public and private sectors, management and support staff, and health occupations in non-health sectors) • Data can be disaggregated for specific subgroups (e.g. by age and sex) and at lowest geographical level • Rigorous collection and processing procedures help to ensure data quality	• Periodicity: usually only once every 10 years • Database management can be cumbersome • Dissemination of findings often insufficiently precise, but micro-data that would allow for in-depth analysis are often not released • Cross-sectional: does not allow tracking of workforce entry and exit • Usually no information on labour productivity or earnings
Labour force survey	• Provides nationally representative data on all occupations • Provides detailed information on labour force activity (including place of work, unemployment and underemployment, earnings) • Rigorous collection and processing procedures help ensure data quality • Requires fewer resources than census	• Variable periodicity across countries: from monthly to once every five years or more • Sample size often too small to permit disaggregation and precise analysis • Cross-sectional: does not allow tracking of workforce entry and exit
Health facility assessment	• Provides data on health facility staff including management and support workers • Data can be disaggregated by type of facility, staff demographics (age, sex) and geographical area • Can be used to track wages and compensation, in-service training, provider productivity, presence/absenteeism of health workers on the day of visit, supervision, available skills for specific interventions and unfilled posts • Usually requires fewer resources than household-based assessments • Can be complemented with routine reporting (e.g. monthly) of staff returns from each facility (such statistics are frequently cited in official publications)	• Usually conducted infrequently and ad hoc • Private facilities and practices are often omitted from sampling • Community-based workers may be omitted • May double-count staff working at more than one facility • Cross-sectional: does not allow tracking of workforce entry and exit • No information on unemployment or on health occupations in non-health services (e.g. health research, teaching) • Variable quality of data across countries and over time
Civil service payroll registries	• Provides data on stock of public sector employees (in terms of physical persons and full-time equivalents) • Data are usually accurately and routinely updated (given strong government financial incentive for quality information, which can also be validated through periodic personnel audits) • Data can be sometimes be disaggregated by age, sex, place of work and pay grade	• Excludes those who work exclusively in the private sector (unless they receive government compensation) • Depending on the nature of the registry, may double-count staff with dual employment and/or exclude locally hired staff not on the central payroll • Many countries have persistent problems eliminating "ghost workers"[a] and payments to staff who are no longer active
Registries of professional regulatory bodies	• Provides head counts of all registered health professionals • Data are routinely updated for entries to the national health labour market • Data can typically be disaggregated by age, sex and sometimes place of work • Depending on the characteristics of the registry, may be possible to track career progression and exit of health workers	• Variable coverage and quality of data across countries and over time, depending on the characteristics and capacities of the regulatory authorities • Usually limited to highly skilled health professionals

[a] Personnel formally on payroll but providing no service (in some cases as a strategy among health personnel to overcome unsatisfactory remuneration or working conditions).
Source: adapted from *(4, 5)*.

Nationally representative population censuses and labour force surveys with properly designed questions on occupation, place of work and field of training allow the identification of people with education and training in health, those in health-related occupations and those employed in health services industries. Enumeration of health workers from census data is a count of the number of people with a health-related occupation and/or working in the health services industry. A similar method is used for counting health workers from labour force survey data, with the additional application of a sampling weight to calibrate for national representation.

Health facility assessments

Health facility assessments can be conducted using different sampling approaches (establishment census or sample survey) and methodologies (self-administered postal, fax or Internet-based questionnaire, or telephone or face-to-face interview). Depending on the nature of the data collection procedures and instruments, in depth information can be obtained on a range of health workforce variables, such as in-service training, support supervision and current staffing levels in relation to planned staffing norms. A census-based sampling approach may be better suited for collecting data on the numbers and distribution of facility-based health workers, while an approach that uses sampling and subsequent extrapolation may be better for collecting data on health worker motivation and productivity. In addition, the nature of facility-based assessments helps in the collection of data for numerous other indicators pertinent to health systems performance assessment, such as infrastructure, availability of supplies and costs.

Administrative records

In many countries, the computerization of administrative records — including public expenditure, staffing and payroll, work permits, health insurance and social security records — is greatly facilitating the possibilities for analysis. The administrative records of health training institutions and professional licensing bodies are potentially valuable sources for tracking the health workforce as many skilled health-care providers require formal training, registration and licensure to practice their professions. These sources offer the advantage of producing continuously updated statistics. In addition, depending on the characteristics of the registries, notably where individuals are assigned a unique identifier, it may be possible to track workers' labour force entry, career progression and exit.

Data comparability and synthesis across multiple information sources

Precisely defining and classifying the health workforce remains an important challenge for comparing information across sources, countries, and over time. Health workers play different roles and often have different national history, culture and codes of practice. For example, nursing and midwifery personnel may be characterized by different educational requirements, legislation and practice regulations, skills and scope of practice between countries (and even within a given country). Countries with critical shortages and maldistribution of highly skilled medical and nursing professionals, have large numbers of non-physician clinicians (often called clinical officers or surgical technicians) and/or community health workers (*12, 13*), for whom the levels of training vary widely. Comparability of health worker data can be enhanced through the setting and use of common definitions and classifications for monitoring the labour market (*4*, *5*). The collection, processing and dissemination of information should follow internationally standardized classifications for social and economic statistics (or their national equivalent), including the International Standard Classification of Occupations (ISCO), International Standard Industrial Classification of all Economic Activities (ISIC) and International Standard Classification of Education (ISCED) (*14–16*). Details of the uses of these frameworks for statistical delineation of the health workforce are presented in the Annex to this section.

In particular, the ISCO enables occupations to be arranged into a hierarchical system according to the skill level and skill specialization required to carry out the tasks and job duties. In the latest 2008 ISCO revision (known as ISCO-08), most health occupations are expected to fall within two sub-major groups: group 22 "health

professionals" (generally well-trained workers in jobs that normally require a university degree for competent performance) and group 32 "health associate professionals" (generally requiring knowledge and skills acquired through advanced formal education but not equivalent to a university degree). This distinction was designed to reflect differences in tasks and duties that may be a consequence of differences in work organization as well as education and training. It must be recognized, however, that in some countries the possibility of distinguishing between the two typologies of nurses and midwives remains limited; inadequacies in the reporting system or incomparability of the education systems and measures of technical capacity may mean that some nursing and midwifery jobs do not fit easily into these two categories.

The main statistical advantages of ISCO are in the setting of clearly defined occupational groups within and across countries and in monitoring the migration of workers between countries. Overall, it is expected that possibilities for health workforce analysis will be strengthened in the upcoming 2010 round of population censuses, which will be able to exploit the new ISCO-08 revision (*17*). Among the significant improvements in ISCO-08 (compared with the previous version adopted in 1988) is the creation of new unit codes for identifying more types of health service providers, including paramedical practitioners and community health workers, as well as certain categories of health management and support workers (notably health service managers, health information technicians and medical secretaries). The March 2008 revision to the *WHO Global atlas of the health workforce* reflects the improved classification (*18*) (Box 2.2). Ideally, information on these categories of workers should be available for all countries where the occupations are practiced.

Box 2.2 Counting health workers: occupational categories in the *Global atlas of the health workforce*

The classification of health workers used for the WHO *Global atlas of the health workforce (18)* is based on criteria for vocational education and training, regulation of health professions, and activities and tasks of jobs, i.e. a framework for categorizing key workforce variables according to shared characteristics. The WHO framework largely draws on the latest revision to the International Standard Classification of Occupations (ISCO) and other standard classifications for social and economic statistics. Data on nine occupational categories are captured in the main data set:

1. Physicians
2. Nursing and midwifery personnel
3. Dentistry personnel
4. Pharmaceutical personnel
5. Laboratory health workers
6. Environmental and public health workers
7. Community and traditional health workers
8. Other health service providers
9. Health management and support workers

National-level data are collated from four main sources: population censuses, labour force surveys, health facility assessments and administrative reporting systems. Where available, disaggregated data are presented on up to 18 occupational categories as well as on the distribution of the health workforce by age, sex and geographical location (urban/rural).

Tools that aim at providing guidelines on how to develop national classifications and their mapping to international standards are available. One such manual, developed by the European Centre for the Development of Vocational Training and Eurostat, based on an analysis of the descriptions of the content of training programmes, is intended to serve as a guide for countries where comprehensive national classifications for vocational education and training are not developed (*19*). The most up-to-date information from the International Labour Organization and latest advice for countries on how to develop, maintain and revise a national occupation classification and its mapping to the international standard can be found on the ISCO web site (*14*).

Given the diversity of information sources for health workforce monitoring, it is especially important that the dissemination of statistics concerning human resources for health include metadata descriptors for each data point, including details on its nature and coverage. This would be crucial for efforts to synthesize and triangulate figures across multiple sources, in particular to distinguish whether the data include: health workers in the private sector, workers who are unpaid or unregulated but performing health-care tasks, potential double-counts of workers holding two or more jobs at different locations, or trained health service providers not currently working at health facilities or other service delivery points.

2.3 Core Indicators

Recommended core indicator 1: Number of health workers per 10 000 population

The **health worker density** — the number of health workers per 10 000 population, by cadre — is the health workforce indicator that is most commonly reported internationally and represents a critical starting point for understanding the health system resources situation in a country. When measured systematically, this indicator provides information on the stock of health workers relative to the population. It can be used to monitor whether, for example, the size of the current workforce meets a given threshold that should allow the most basic levels of health-care coverage to be achieved across the country. The advantages are that it is simple to calculate, may be used for comparative analyses across countries and over time, and is easy to understand among a wide range of audiences, facilitating its usefulness for advocacy purposes. However, it does not necessarily take into account all health system objectives, particularly with regard to accessibility, equity, quality and efficiency.

Definition

The number of health workers available in a country relative to the total population.

- *Numerator*: the absolute number of health workers at a given time in a given country or region (that is, all persons eligible to participate in the national health labour market by virtue of their skills, age, ability and physical presence in the country).
- *Denominator*: the total population for the same geographical area.

Data collection methodology

Ideally assessed through routine administrative records on numbers of active health workers compiled, updated and submitted regularly (e.g. quarterly) by district health officers, payroll registrars, individual health facilities (both public and private) and/or health professional regulatory bodies, and collated into a centralized HRIS or database maintained by the ministry of health or other mandated agency. Information on the stock of health workers and on the total population should be periodically validated and adjusted against data from a population census or other nationally representative source.

Comparability issues

Data on health occupations should ideally be classified according to the latest ISCO revision (or its national equivalent).

Periodicity

Monthly, quarterly or annually for routine administrative records. A validation exercise should be conducted every 3–5 years against a national population-based or facility-based assessment.

Complementary dimensions

The most complete and comparable data currently available on the health workforce globally pertain to physicians, nurses and midwives. However, the health workforce includes a wide range of other categories of service providers (e.g. dentists, pharmacists, community health workers) as well as management and support workers (health service managers, health economists, health information technicians and others). Information on all of these categories of human resources for health should ideally be captured.

Recommended core indicator 2: Distribution of health workers – by occupation/ specialization, region, place of work and sex

There is increasing interest globally in equity in health and the pathways by which inequities arise and are perpetuated or exacerbated. Imbalance (or maldistribution) in the supply, deployment and composition of human resources for health, leading to inequities in the effective provision of health services, is an issue of social and political concern in many countries. Drawing on an analytical framework for understanding health workforce imbalance (*20*), at least four typologies for monitoring the **distribution of health workers** should be considered: (i) imbalances in occupation/specialty, (ii) geographical representation, (iii) institutions and services, and (iv) demographics. As the impact of these different types of imbalances on the health system varies, there is a need to monitor and assess each of these dimensions of workforce distribution. In practical terms, this implies that the collection, processing and dissemination of health workforce data should enable disaggregation by occupation (and within a given occupation, for example by medical specialization), by geographical typology (e.g. urban or rural, within or outside the capital city, by province/state or district), by place of work (e.g. hospital or primary health-care facility, public or private), by main work activities (e.g. preventive/curative/rehabilitative health-care provision versus other functions such as teaching or research), and by sex.

Definition

The distribution of health workers according to selected characteristics — notably, by occupation, geographical region, place of work and sex.

- *Numerator*: the number of health workers with a given characteristic (e.g. working in a privately operated health facility).
- *Denominator*: the total number of health workers.

Data collection methodology

The means of measuring the distribution of the health workforce is a simple disaggregation of the stock of health workers (see above indicator of density) according to the selected characteristics.

Comparability issues

Data on occupation and place of work should ideally be classified by or mapped to the ISCO and ISIC, respectively.

Periodicity

Monthly, quarterly or annually for routine administrative records. A validation exercise should be conducted every 3–5 years against a national population-based or facility-based assessment.

Complementary dimensions

Because counts of workers in the private sector are likely to be less accurate when drawing on administrative sources than counts of those in the public sector, and because private for-profit providers are often less accessible to low-income populations, it is recommended that national and international reports include statistics disaggregated by employment sector (public, private for-profit and private not-for-profit). Additional information on health workers' demographic characteristics may also be important for policy and planning, e.g. the age distribution can lend insights into the numbers of workers approaching retirement age.

Recommended core indicator 3: Annual number of graduates of health professions educational institutions per 100 000 population – by level and field of education

Another commonly reported indicator for monitoring health workforce metrics is the **annual output (or number of graduates) of health professions educational institutions** relative to the population (or to the current active health workforce). This is actually not one measure but the aggregate of multiple pieces of information, depending on the number of cadres in the health system. The number and type of newly trained health workers is relevant everywhere: in countries that need increased production among all cadres, in countries that need more workers in rural and underserved areas, and in countries receiving large numbers of foreign-trained workers that are aiming towards national self-sufficiency of health workforce regeneration.

Definition

Number of graduates from health profession educational institutions (including schools of medicine, dentistry, pharmacy, nursing, midwifery and other health services) during the last academic year, divided by the total population.

- *Numerator*: the absolute number of graduates of health professions educational institutions in the past academic year (by level and field of education).
- *Denominator*: total population.

Data collection methodology

Ideally assessed through routine administrative records from individual training institutions (both public and private) submitted regularly (e.g. annually) and collated into a centralized HRIS or database maintained by the ministry of health or other mandated agency. In some cases, data may be validated against registries of professional regulatory bodies where certification or licensure is required for practice.

Comparability issues

Data on health worker education and training should ideally be classified by or mapped to the ISCED.

Periodicity

Annually.

Complementary dimensions

Data on the output of health professions educational institutions can be used to assess health workforce renewal or the ratio of entry to the health workforce (i.e, the number of graduates relative to the total active health workforce). When combined with data on the numbers of foreign-trained health workers in the country, this information can be used to assess the level of national self-sufficiency in human resources for health. Data from school records can also be used to obtain information on student applications, enrolments and attrition, as well as institutional capacity and curriculum content, for the production of quality health workers (*21*).

2.4 Additional considerations for monitoring national workforce plans and actions

Strengthening the performance of health systems depends on more than just increasing the numbers of health workers; actions for assessing and strengthening their recruitment, distribution, retention and productivity are also important. Actions may include: adopting new approaches to pre-service and in-service training; strengthening workforce management; establishing or improving incentives for addressing distribution and retention challenges; or task-shifting (delegating tasks, where appropriate, to less specialized health workers). Such strategic plans should normally include targets for monitoring health workforce metrics in both the short- and the long-term and adaptation to any major health sector reforms (for example, decentralization). At the same time, the plans should be harmonized with broader strategies for social and economic development (e.g. the national poverty reduction strategy paper). They should also focus on the human resources development needs of priority health programmes and aim to integrate these into a primary health-care framework, based on epidemiological evidence.

Table 2.2 presents a series of indicators for monitoring human resources dynamics and their potential means of verification. Not all of the indicators necessarily require a numerical answer; e.g., the existence of a documented human resources management and development plan could be a relevant indicator for providing information on a particular strategic direction (*22*). The list suggested here is neither exhaustive nor absolute, but an attempt to build a framework for monitoring and evaluation of health workforce strategies and actions at the country level. Disaggregation of relevant indicators allows for monitoring progress in actions to improve equity in access and coverage of essential health interventions, especially among underserved communities or other nationally prioritized population groups. A number of tools and resources exist to assist countries in setting their health personnel needs and targets (*23*). Approaches should focus not only on health service providers, but also the health management and support staff needed to keep systems and services running.

Table 2.2 Selected indicators for monitoring country actions for strengthening the health workforce

Objectives and actions	Possible output indicator	Potential data source	Associated outcome indicator
Effective management and development of human resources in health systems requiring top-level direction — a documented plan is one element of such direction	Costed, prioritized human resources management/development plan exists	Government reports and/or interviews with key informants (e.g. senior management in ministry of health)	**Core indicator 1:** Number of health workers per 10 000 population
Strengthening of information and evidence base for policy and planning, including regularly compiling and using validated statistics on human resources for health to support decision-making	Number of national data points on the stock and distribution of health workers produced within the last three years	Data dissemination reports (e.g. government, professional regulatory bodies, census/survey reports)	
Increasing the size and capacity of the national health workforce, which may include recruitment and training of community health workers (i.e. community health aides selected, trained and working in the communities from which they come)	Number of entrants into community health training programmes (with nationally approved curriculum) in the past 12 months, e.g. by sex	Routine administrative records of training programmes and/or interviews with key informants (e.g. programme managers)	
Increasing the capacity of health professions educational institutions, including increasing the quantity and quality of instructors and auxiliary staff	Number of students in medical, nursing and midwifery (pre-service) education programmes per qualified instructor	Routine administrative records of education and training institutions and/or interviews with key informants (e.g. faculty directors)	
Strengthening recruitment and deployment systems include incentive schemes to ensure that primary health-care facilities meet their nationally recommended staffing norms	Number of health workers newly recruited at primary health-care facilities in the past 12 months, e.g. expressed as percentage of planned recruitment target	Routine administrative records on facility staffing and/or interviews with key informants (e.g. facility managers)	**Core indicator 2:** Distribution of health workers (by occupation/ specialization, region, place of work and sex)
Effective interaction with or regulation of the private sector requiring accurate knowledge of the numbers, types and qualifications of private sector providers	Private provider registration system is up to date and accurate	Government reports and/or interviews with key informants (e.g. ministry, professional regulatory bodies, associations of private providers)	

Continues...

Continued

Objectives and actions	Possible output indicator	Potential data source	Associated outcome indicator
Effective management of performance of health workers. Related activities include training programmes for updating skills for effective human resources management and development	Number of senior staff at primary health-care facilities who received in-service management training (with nationally approved curriculum) in the past 12 months	Routine administrative records of training programmes and/or interviews with key informants (e.g. programme managers)	**Optional indicator:** Rate of retention of health service providers at primary health-care facilities in the past 12 months
Optimizing health worker motivation and productivity, which may include strengthening of supervision. Potentially one of the most effective instruments to improve the competence of individual workers	Percentage of health service providers at primary health-care facilities who received personal supervision in the past six months	Ideally assessed through a sample survey of health workers; also can be assessed via facility administrative records	
Reducing inefficiencies, which may include identifying and reducing worker absenteeism that is known to be a significant problem in the public health system in many contexts	Number of days of health worker absenteeism relative to the total number of scheduled working days over a given period among staff at primary health-care facilities	Ideally assessed though facility staffing/payroll records; can also be assessed by means of special study cross-examining duty roster lists with actual head-counts on the day of visit	
Managing health workforce market. Among countries that receive large numbers of health workers from abroad, efforts may be undertaken to manage the pressures of the international health workforce market and its impact on migration	Number of health workers trained abroad newly entering into the country in the past 12 months, e.g. relative to the number of nationally trained graduates	Entry visas, work permits and other administrative sources (e.g. professional regulatory bodies); migration estimates over longer periods can also sometimes be derived from population census sources	**Optional indicator:** Proportion of nationally trained health workers (e.g. with distribution of foreign trained workers by country of origin)

It will be imperative to review the present selection of proposed indicators at the national and sub-national levels, particularly in the process of establishing appropriate country-specific baselines and targets. It is important to keep in mind the need, where possible, to routinely compile, analyse and act on data collected through existing administrative processes. This routine data collection can then be supplemented and validated through periodic or ad hoc surveys and other standard statistical sources.

Sharing information is important so that improved human resources strategies can be compared and used by others. Intercountry knowledge sharing as part of the HRIS strengthening process provides models that help to avoid repeating mistakes and standardizes information and evidence across regions and countries. In particular, health workforce observatories are a valuable mechanism that can be used for widely disseminating information and evidence for effective practices at the national, regional and global levels (Box 2.3).

Box 2.3 A mechanism for sharing experiences, information and evidence to support policy decision-making: health workforce observatories

Initiatives for supporting the development, implementation, monitoring and evaluation of human resources for health actions and strategies should ensure not only the collection and processing of appropriate data, but also dissemination and utilization for policy and managerial decisions. Health workforce observatories are being increasingly promoted to improve the translation of information and evidence into policy-making and practice by offering a cooperative mechanism for countries and partners to produce and share information and knowledge. Although the functions of and triggering force for the emergence of health workforce observatories differ across countries and regions, depending on specific contexts and needs, all have the common objective of bridging the gap between evidence and policies.

Some examples of health workforce observatories at the national and regional levels include:

- Africa Health Workforce Observatory (http://www.afro.who.int/hrh-observatory)
- Eastern Mediterranean Region Observatory on Human Resources for Health (http://www.emro.who.int/hrh%2Dobs)
- Latin America and Caribbean Observatory of Human Resources in Health (http://www.observatoriorh.org)
- Observatorio Andino de Recursos Humanos en Salud (http://bvsde.per.paho.org/oarhs2/index.php)
- Observatório de Recursos Humanos en Saúde do Brasil (http://www.ObservaRH.org.br)
- Ghana Health Workforce Observatory (http://www.ghanahrhobservatory.org)
- Sudan National Human Resources for Health Observatory (http://www.hrhobservatory.sd/)

To sum up, practical and affordable strategies exist for generating timely and reliable statistics on the health workforce and for developing the capacity to collect, manage, analyse and disseminate them (Box 2.4). The cost of not improving workforce statistics is much higher than that of investing in these strategies: poorly informed decisions and unmonitored interventions can have long-term social and economic effects, which is critical because impacts of interventions and effects of adjustments can sometimes take several years to be observable (up to eight years in the case of producing physicians).

Box 2.4 Financial resource needs for a timely and comprehensive human resources information system

In practical terms, the cost of collecting and processing nationally representative data on the health workforce will be marginal for exercises that already include questions on occupation, education and place of work (e.g. population census or labour force survey). While little research has been undertaken into the investment levels needed to ensure a sound HRIS drawing primarily on administrative data sources, estimates of the cost of a comprehensive health information system including a human resources component range from US$ 0.53 to US$ 2.99 annually per capita (*24*). The cost of a household- or facility-based assessment with a sufficient sample size allowing for disaggregated estimates will vary depending on the level of technical support required in the country and the final sample size, ranging from US$ 350 000 to over US$ 1 million. In general, guidelines suggest that health information, monitoring and evaluation costs comprise between 3% and 11% of total project funds (*25*).

Given the diversity of potential information sources, monitoring and evaluation of human resources for health requires good collaboration between the ministry of health and other sectors that can be reliable sources of information, notably the central statistical office, ministry of education, ministry of finance, ministry of labour, health professional regulatory and licensing bodies, associations of private providers, and individual health-care facilities and health training institutions. Ideally, a commitment should be established in advance to investigate purposeful ways to put the data to use. Discussions between representatives of the various stakeholder groups, under the leadership of the ministry of health, are recommended from the beginning to set an agenda for data harmonization, publication and use, taking into account the timeline for data collection and processing and the information needs for health workforce policy and planning.

Selected tools

Dal Poz MR, et al. (eds.). *Handbook on monitoring and evaluation of human resources for health*. Geneva, World Health Organization, World Bank and United States Agency for International Development, 2009 (http://www.who.int/hrh/resources/handbook/en/index.html, accessed March 27, 2010).

> This Handbook aims to strengthen country technical capacity to accurately monitor their health workforce. It offers health managers, researchers and policy-makers a comprehensive and standard reference for monitoring and evaluating human resources for health, and brings together an analytical framework with strategy options for improving the health workforce information and evidence base, as well as country experiences to highlight approaches that have worked.

Further reading

Human Resources for Health Action Framework (http://www.capacityproject.org/framework, accessed March 22, 2010).

Human Resources for Health (HRH) tools and guidelines. HRH situation analysis. Geneva, World Health Organization (http://www.who.int/hrh/tools/situation_analysis/en/index.html, accessed March 22, 2010).

Human Resources for Health (HRH) tools and guidelines. HRH planning. Geneva, World Health Organization (http://www.who.int/hrh/tools/planning/en/index.html, accessed March 22, 2010).

Human Resources for Health (HRH) tools and guidelines. HRH health management systems. Geneva, World Health Organization (http://www.who.int/hrh/tools/management/en/index.html, accessed March 22, 2010).

HRIS Strengthening Implementation Toolkit (http://www.capacityproject.org/hris/hris-toolkit/index.html, accessed March 22, 2010).

Human Resources for Health (online journal) (http://www.human-resources-health.com, accessed March 22, 2010).

Spotlight on Health Workforce Statistics (series of fact files). Geneva, World Health Organization (http://www.who.int/hrh/statistics/spotlight/en/index.html, accessed March 22, 2010).

Service Availability Mapping (SAM) (assessment tool and country reports). Geneva, World Health Organization (http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/, accessed July 26, 2010).

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Annex. Mapping health workforce statistics: Relevant codes in selected international standard classifications for social and economic statistics

Classification of education and training

Comparability of information on education and training of health workers can be enhanced through the collection, processing and dissemination of data following the ISCED, which provides a framework for the compilation and presentation of national and international education statistics and indicators for policy analysis and decision-making. The ISCED allows a variety of education programmes to be classified by level and field of education. Most specializations relevant to health workforce monitoring fall under subfield 72 "health", including education in medicine, medical and health services, nursing and dental services (Table 2.A.1). Depending on the field, relevant levels may range from upper secondary to second stage of tertiary education.

Table 2.A.1 Fields of education related to health in the International Standard Classification of Education (ISCED-97)

Code	Name	Specializations	
Fields of education directly related to health			
72	Health	Medicine	The study of the principles and procedures used in preventing, diagnosing, caring for and treating illness, disease and injury in humans and the maintenance of general health. Principally, this field consists of training of physicians.
		Medical services	The study of physical disorders, treating diseases and maintaining the physical well-being of humans, using non-surgical procedures.
		Nursing	The study of providing health care for the sick, disabled or infirm and assisting physicians and other medical and health professionals diagnose and treat patients.
		Dental services	The study of diagnosing, treating and preventing diseases and abnormalities of the teeth and gums. It includes the study of designing, making and repairing dental prostheses and orthodontic appliances. It also includes the study of providing assistance to dentists.
Fields of education associated with health			
76	Social services	Social work and counselling	The study of the welfare needs of communities, specific groups and individuals and the appropriate ways of meeting these needs. Programmes in social work, social welfare, crisis support and counselling are included here.
85	Environmental protection	Environmental protection	The study of the relationships between living organisms and the environment in order to protect a wide range of natural resources. Programmes in services to the community dealing with items that affect public health, such as hygiene standards in food and water supply, are included here.
86	Security services	Occupational health and safety	The study of recognizing, evaluating and controlling environmental factors associated with the workplace. Programmes in occupational health and industrial hygiene, labour welfare (safety) and ergonomics are included here.

Source: adapted from *(16, 19)*.

Classification of occupations

To facilitate the harmonization of information on the health workforce situation within and across countries, data on health workers should ideally be mapped to the latest revision of ISCO (or its national equivalent). This classification offers a system for classifying and aggregating occupational information for purposes of statistical

delineation, description and analysis. It uses a hierarchical structure of occupational titles and codes, essentially reflecting the distinction of subgroups of the health workforce according to assumed differences in skill level and skill specialization required to fulfil the tasks and duties of jobs (Table 2.A.2).

Table 2.A.2 Occupational titles related to health in the International Standard Classification of Occupations, 2008 revision (ISCO-08)

Group code			Occupational title
Sub-major	Minor	Unit	
22			**HEALTH PROFESSIONALS**
	221		**Medical doctors**
		2211	Generalist medical practitioners
		2212	Specialist medical practitioners
	222		**Nursing and midwifery professionals**
		2221	Nursing professionals
		2222	Midwifery professionals
	223	**2230**	**Traditional and complementary medicine professionals**
	224	**2240**	**Paramedical practitioners**
	226		**Other health professionals**
		2261	Dentists
		2262	Pharmacists
		2263	Environmental and occupational health and hygiene professionals
		2264	Physiotherapists
		2265	Dieticians and nutritionists
		2266	Audiologists and speech therapists
		2267	Optometrists and ophthalmic opticians
		2269	Health professionals not classified elsewhere
32			**HEALTH ASSOCIATE PROFESSIONALS**
	321		**Medical and pharmaceutical technicians**
		3211	Medical imaging and therapeutic equipment technicians
		3212	Medical and pathology laboratory technicians
		3213	Pharmaceutical technicians and assistants
		3214	Medical and dental prosthetic and related technicians
	322		**Nursing and midwifery associate professionals**
		3221	Nursing associate professionals
		3222	Midwifery associate professionals
	323	**3230**	**Traditional and complementary medicine associate professionals**

Continues...

Continued

Group code			Occupational title
Sub-major	Minor	Unit	
	325		**Other health associate professionals**
		3251	Dental assistants and therapists
		3252	Medical records and health information technicians
		3253	Community health workers
		3254	Dispensing opticians
		3255	Physiotherapy technicians and assistants
		3256	Medical assistants
		3257	Environmental and occupational health inspectors and associates
		3258	Ambulance workers
		3259	Health associate professionals not classified elsewhere
ADDITIONAL HEALTH RELATED UNIT GROUPS			
		1342	Health service managers
		1343	Aged care service managers
		2634	Psychologists
		2635	Social work and counselling professionals
		3344	Medical secretaries
		5321	Health-care assistants
		5322	Home-based personal care workers
		5329	Personal care workers in health services not classified elsewhere

Classification of branches of economic activity

The ISIC classification can form a basis for analysis of data on place of work, as it allows pooling of information on workers in health services across different types of economic systems within a comparative framework. In ISIC, economic producing units are grouped into successively broader levels of classification in a four-level hierarchy; the grouping is done according to similarities in the character of the goods and services produced, the uses to which the goods and services are put, and the inputs, process and technology of production.

Relevant information for health workforce analysis essentially falls under ISIC division 86, "human health activities". Data disaggregated at the lowest levels of classification may allow further analysis across all the different types of health systems activities, including public health services, supplies procurement and financing (Table 2.A.3).

Continues...

Table 2.A.3 Economic sectors related to health in the International Standard Industrial Classification of all Economic Activities (ISIC), fourth revision

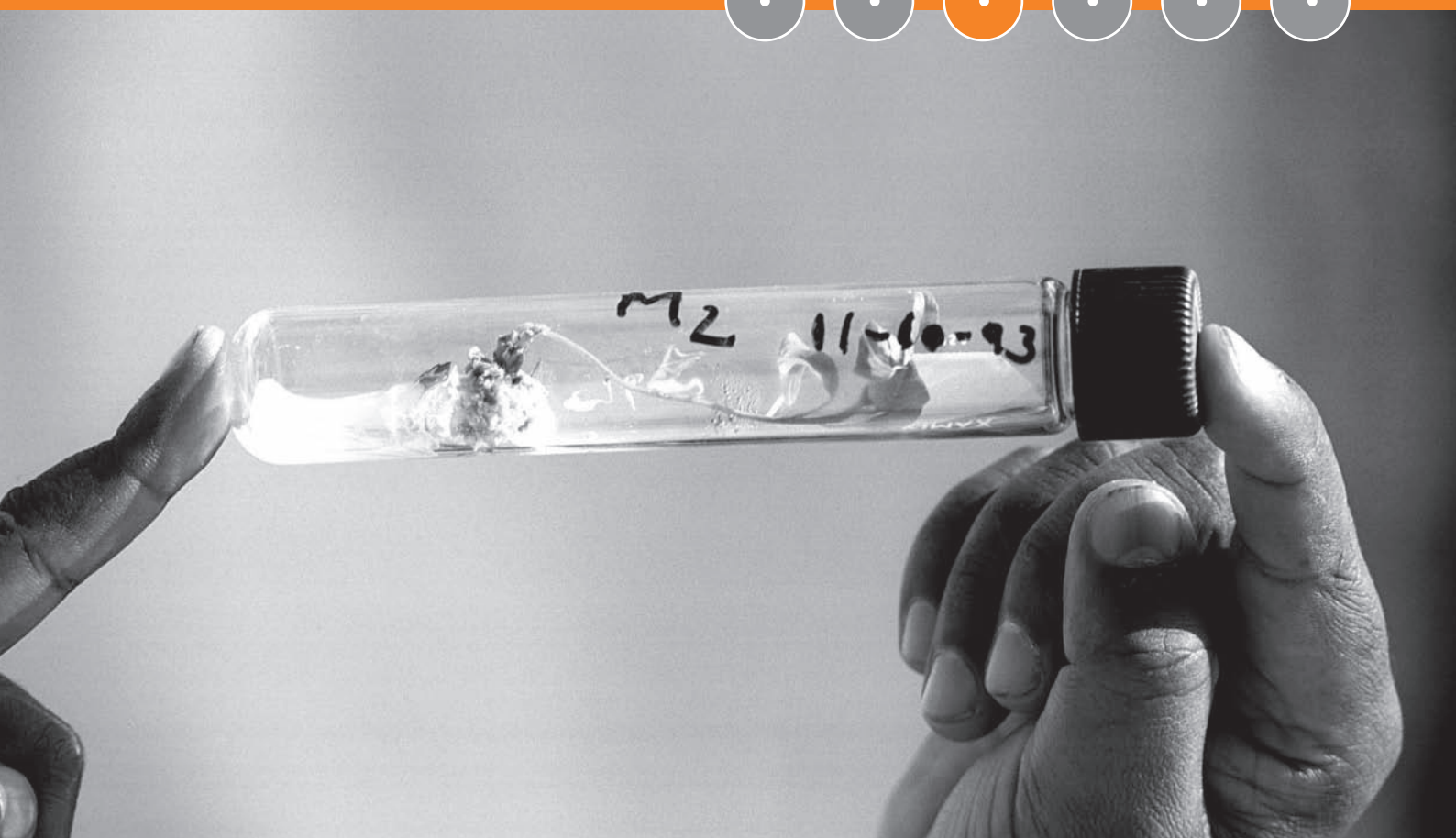
Code				Economic activity
Section	Division	Group	Class	
Core health industry groups and classes				
Q	86			Human health activities
		861	8610	Hospital activities
		862	8620	Medical and dental practice activities
		869	8690	Other human health activities
Selected associated classes				
C	21	210	2100	Manufacture of pharmaceuticals, medicinal, chemical and botanical products
	32	325	3250	Manufacture of medical and dental instruments and supplies
E	36	360	3600	Water collection, treatment and supply
	37	370	3700	Sewerage
G	47	477	4772	Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles in specialized stores
K	65	651	6512	Non-life insurance (including provision of health insurance)
M	71	712	7120	Technical testing and analysis (include testing in the field of food hygiene; testing and measuring air and water pollution)
O	84	841	8412	Regulation of the activities of providing health care, education, cultural services and other social services
			8430	Compulsory social security activities (including funding and administration of government-provided social security programmes for sickness, work-accident, temporary disablement, etc.)
Q	87	871	8710	Residential nursing care facilities
		872	8720	Residential care activities for mental retardation, mental health and substance abuse
	88	881	8810	Social work activities for the elderly and disabled (without accommodation)

Source: *(15)*.

Other classifications

It is also of significance to countries and stakeholders to be able to distinguish the different categories of human resources within health systems, such as those who are regular employees of the systems and those who are not, or those whose basic salaries are drawn from the government budget in comparison with health workers who are funded by other sources. A full list of international classifications for the collection and dissemination of economic and social statistics is available at the United Nations Statistics Division web site *(26)*.

3. Health information systems



3.

Health information systems

3.1 Introduction

Sound and reliable information is the foundation of decision-making across all health system building blocks. It is essential for health system policy development and implementation, governance and regulation, health research, human resources development, health education and training, service delivery and financing.

The health information system provides the underpinnings for decision-making and has four key functions: (i) data generation, (ii) compilation, (iii) analysis and synthesis, and (iv) communication and use. The health information system collects data from health and other relevant sectors, analyses the data and ensures their overall quality, relevance and timeliness, and converts the data into information for health-related decision-making (*1*).

The health information system is sometimes equated with monitoring and evaluation but this is too reductionist a perspective. In addition to being essential for monitoring and evaluation, the information system also serves broader objectives, such as providing an alert and early warning capability, supporting patient and health facility management, enabling planning, underpinning and stimulating research, permitting health situation and trends analyses, orienting global reporting, and reinforcing communication of health challenges to diverse users. Information is of little value if it is not available in formats that meet the needs of multiple users, i.e. policy-makers, planners, managers, health-care providers, communities and individuals. Dissemination and communication are therefore essential attributes of the health information system.

Health planners and decision-makers need different kinds of information including:

- health determinants (socioeconomic, environmental, behavioural and genetic factors) and the contextual environments within which the health system operates);
- inputs to the health system and related processes (policy and organization, health infrastructure, facilities and equipment, costs, human and financial resources and health information systems);
- the performance or outputs of the health system (availability, accessibility, quality and use of health information and services, responsiveness of the system to user needs, and financial risk protection);
- health outcomes (mortality, morbidity, disease outbreaks, health status, disability and wellbeing); and
- health inequities (determinants, coverage of use of services, and health outcomes, and including key stratifiers such as sex, socioeconomic status, ethnic group and geographical location).
- A good health information system brings together all relevant partners to ensure that users of health information have access to reliable, authoritative, usable, understandable and comparative data.

3.2 Expectations from country health information systems

Health information systems serve multiple users and a wide array of purposes that can be summarized as the generation of information to enable decision-makers at all levels of the health system to identify problems and needs, make evidence-based decisions on health policy and allocate scarce resources optimally (*1*). Data from different sources are used for several purposes at different levels of the health-care system.

- Individual level data about the patient's profile, health-care needs and treatment serve as the basis for clinical decision-making. Health-care records provide the basis for sound individual clinical care. Problems can arise when health workers are overburdened by excessive data and reporting demands from multiple and poorly coordinated subsystems.
- Health facility level data, both from aggregated facility level records and from administrative sources, such as drug procurement records, enable health-care managers to determine resource needs, guide purchasing decisions for drugs, equipment and supplies, and develop community outreach. Data from health facilities can provide immediate and ongoing information relevant to public health decision-making, but only if certain conditions are met. The data must be of high quality, relate to all facilities (public and private), and be representative of the services available to the population as a whole.
- Population level data are essential for public health decision-making and generate information not only about those who use the services but also, crucially, about those who do not use them. Household surveys have become a primary source of data in developing countries where facility-based statistics are of limited quality. Household surveys are needed everywhere, however, because they are the only good source of information on individual beliefs, behaviours and practices that are critical determinants of health-care use and health status.
- Public health surveillance brings together information from facilities and communities with a main focus on defining problems and providing a timely basis for action. This is especially important when responses need to be urgent, as for epidemic diseases. The need for timeliness of reporting and response and the requirement for effective linkages, to those in authority with the responsibility for disease control, impose additional requirements on health information systems.

Recognition of the importance of health information systems to be capable of generating reliable data is growing. In many countries, health sector reform and decentralization have brought about shifts in functions between the central and peripheral levels and have generated new information needs with changing requirements for data collection, processing, analysis and dissemination. Health sector reforms also magnify the need for standardization and quality of information.

Performance and results based monitoring, stimulated by unprecedented increases in development assistance and global health initiatives — such as the Global Alliance on Vaccines Initiative (GAVI), Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), the United States President's Emergency Plan for AIDS Relief (PEPFAR), and the Roll Back Malaria partnership — have increased pressure on governments and organizations to improve their performance and demonstrate tangible results to their stakeholders. In this environment, a premium has been placed on the existence of adequate health information of good quality. Health information systems are called upon to enable tracking along the continuum of inputs to the health system, processes and outputs, as well as outcomes and impact.

Few developing countries have sufficiently strong and effective health information systems to meet all these diverse information needs. New technologies can contribute to improving data generation, compilation and exchange but will require the existence of clear data quality standards to be of optimal value.

3.3 Sources of information on country health information systems

Information about the functioning of the health information system can be obtained from the different sectors and agencies that are responsible for the generation, synthesis, analysis and use of data at the country, regional and global levels. At the country level, the ministries of health record the timeliness and quality of data reported through health services and disease surveillance systems. National Statistics Offices maintain information on

the availability and quality of data generated through major data collection undertakings, such as the decennial census, large-scale household surveys and the civil registration system. As custodians of national official statistics, they often have explicit requirements for the method of data collection, compilation and sharing, and adhere to the *Fundamental principles of official statistics* devised by the United Nations (*2*). International agencies working in health also maintain information about the availability and quality of data on international health goals, including (but not limited to) the MDGs.

3.4 Criteria for assessing country health information systems performance

Criteria for assessing performance of health information systems and the quality of data they generate have rarely been defined, let alone implemented. In contrast, in sectors other than health — particularly for macroeconomic and financial statistics — considerable work has been done to define standards, guidelines and best practices (see Box 3.1).

Box 3.1 Tools to assess the quality of national statistics

The Organisation for Economic Co-operation and Development (OECD) has developed statistical standards, guidelines and best practices on development indicators (*3*). Explanatory metadata are collected and published to accompany all data thus enabling users to assess data quality, i.e. fitness for use. Based on these metadata, comparability across countries — an important aspect of data quality — can be assessed.

Some national statistics offices have commissioned external reviews of performance to identify strengths and weaknesses and to make recommendations for improvement (*4*). The United Nations *Fundamental principles of official statistics* is often used as a general framework to assess the performance of national statistics offices (*5*). The quality of information is central to its usefulness. Information must be reliable, up to date, independent and trustworthy. At the same time, it is important to avoid duplication of efforts and minimize the burden of data collection on front-line staff, so that data are generated with minimal disruption of the delivery of care.

Although there is wide agreement in the literature on what the components of data quality should be, there is no universal consensus on how to group them. Some authors have proposed headings covering accuracy, relevance, coherence and consistency, continuity, timeliness, accessibility and revisability (*6*). Others include coherence (especially comparability), availability and clarity (*7*). Clearly, conflicts can arise between different facets, such as those between consistency and timeliness, and trade-offs must be made. The extent to which statistics meet users' needs and expectations for statistical information is widely recognized to be of paramount importance. To allow users to assess the quality of the statistics they utilize, producers of statistics provide neutral, descriptive information about all aspects of statistics that affect users' views on how well the statistics might meet their needs and expectations.

The International Monetary Fund (IMF) has developed the General Data Dissemination Strategy (GDDS) to help countries in improving the quality of their data (*8*). The GDDS strategy provides a framework for evaluating needs for data improvement and setting priorities; it provides guidance on dissemination to the public of comprehensive, timely, accessible and reliable economic, financial and sociodemographic statistics.

Arising out of the dissemination strategy, the IMF has produced a Data Quality Assessment Framework (DQAF), which identifies quality-related features of governance of statistical systems, processes and products. The framework is rooted in the *Fundamental principles of official statistics* and describes five dimensions of quality — assurances of integrity, methodological soundness, accuracy and reliability, serviceability and accessibility. The framework, which is used for comprehensive assessments of countries' data quality, covers institutional environments, statistical processes and characteristics of the statistical products (*9*).

The Food and Agriculture Organization (FAO) has developed a Data Quality Stamp for statistical data that meet quality criteria including: availability of appropriate metadata for all data series; use of international classifications; provision of an updated schedule to ensure timeliness; provision of global coverage information in the data series; integration of the data series in the databases within a statistical framework; and assurance that the data series is up to date (*10*).

A commonly used standards framework is provided by the *Fundamental principles of official statistics* (*2*). Data quality assurance approaches generally distinguish assessment criteria for data outputs from those that relate to the quality of institutional frameworks, which is a prerequisite for the generation of reliable data. Some of the quality frameworks are intended to be used to assess national level data, whereas others relate to the quality of data issued by international agencies, such as the World Bank or the International Monetary Fund (IMF).

The Health Metrics Network (HMN) framework identifies the key components and standards of a country health information system (*1*). The framework describes health information system components in terms of resources, indicators, data sources, data management, information products, and dissemination and use and specifies the standards to be attained for each component.

3.5 Methods for assessing country health information system performance

A country's health information system performance can be assessed either by using a self-administered tool or through independent (often external) expert evaluation (see the matrix in Table 3.1). The major advantage of *self-assessment approaches* is the degree of country ownership generated that enables the assessment to serve as the basis for the development of a plan for improvement. However, self-assessment approaches are generally time consuming and complex to implement; they are less likely to generate results that can be compared over time or between countries and are more likely to be biased. *Independent assessment* is generally based on existing sources, such as databases of international agencies, so as to minimize the reporting burden on countries. The disadvantage is that countries may not agree with the assessment and therefore may not use the results for developing an improvement strategy.

Table 3.1 Assessment matrix for country information systems performance

National data process	Self-assessment	Independent assessment
Statistical system	General Data Dissemination Strategy	World Bank Statistical Capacity Indicator score
Health information system	Health Metrics Network self-assessment tool	Health Information System Performance Index (HISPIX)
		Specific indicators: reporting rates, data and statistics availability

Self-assessment approaches

The *General Data Dissemination Strategy* (GDDS) developed by IMF (*8*) is designed:

- to assist countries in assessing and documenting their statistical practices and procedures and in compiling metadata;
- to enable countries to develop and implement plans for improvement in the different areas of statistics covered by the GDDS.

The principal goal of the GDDS is to improve data quality — quality relating both to the actual data and also to the whole statistical system. The strategy involves providing short-term technical assistance to countries to engage in a systematic review of existing statistics as compared with international standards — essentially an externally facilitated self-assessment. The process engages both data producers and data users and seeks to bring about more effective communication both among national statistical agencies and with the user community. Based on the result of the assessment, countries develop a comprehensive improvement plan for the statistical system. The GDDS has been used as the basis for the formulation of national strategies for the development of statistics.

The *HMN assessment tool* brings together country users and producers of health data to assess the strengths and weaknesses of the national health information system. Like the GDDS, it involves a facilitated assessment that is intended to guide countries' efforts to strengthen their health information systems by enabling a baseline analysis and identification of areas for improvement in which donor support might be sought. The HMN assessment tool framework follows a cascading structure that flows from five main dimensions of data quality: (i) integrity, (ii) methodological soundness, (iii) accuracy and reliability, (iv) serviceability, and (v) accessibility. For each of these interrelated dimensions, the framework identifies pointers, or observable features, that can be used in assessing quality. In addition to these five dimensions, the tool describes a set of prerequisites for the assessment of data quality. The coverage of these dimensions recognizes that data quality encompasses characteristics related to the institution or system used for the production of the data as well as characteristics of the individual data product. By engaging all stakeholders, it helps develop a shared vision of a more coherent, integrated, efficient and useful system.

More than 50 countries completed their health information systems assessment by the end of 2009 (*11*). Overall, the self-assessment approach appears to have worked well in generating a broad understanding of the HMN concept of health information systems, cutting across both disease-based and source-based reserves of information. This tool resulted in enhanced collaboration among various stakeholders in health information, particularly between health and statistics constituencies. However, considering the degree of stakeholder involvement required, the approach is complex and time consuming to administer. There are issues of objectivity of the respondents and possible conflicts of interest that arise when a self-assessment approach used is not well-suited to enabling comparisons between countries and over time.

Independent assessments

The *World Bank Statistical Capacity Indicator* is calculated on the basis of a desk review by external technical experts. This summary measure provides an overview of the statistical capacity of developing countries and is based on a diagnostic framework developed with a view to assessing the capacity of statistical systems using metadata information generally available for most countries. The framework has three dimensions: (i) statistical practice (the ability to adhere to internationally recommended standards and methods); (ii) data collection (frequency of censuses/surveys and completeness of vital registration); and (iii) indicator availability (availability and frequency of key socioeconomic indicators). Countries are scored against specific criteria, using information available from the World Bank, IMF, the United Nations, United Nations Educational, Scientific and Cultural Organization (UNESCO) and WHO. A composite score for each dimension and an overall score combining all three dimensions is derived for each country on a scale of 0–100. A score of 100 indicates that the country meets all the criteria and suggests good statistical standing. The assessment is carried out annually.

3.6 Core indicators

Indicators of country health information system performance can be categorized as two broad types:

1. Indicators related to data generation using core sources and methods (health surveys, civil registration, census, facility reporting, health system resource tracking). These reflect country capacity to collect relevant data at appropriate intervals and uses the most appropriate data sources. Benchmarks include periodicity, timeliness, contents of data collection tools and availability of data on key indicators.
2. Indicators related to country capacities for synthesis, analysis and validation of data. These measure key dimensions of the institutional frameworks needed to ensure data quality, including independence, transparency and access. Benchmarks include the availability of independent coordination mechanisms and the availability of microdata and metadata.

The following indicators are grouped according to the assessed data sources that make up a country's health information system. The last group of indicators addresses the capacity for data synthesis, analysis and validation. Table 3.2 defines the indicators listed below and describes methods of measurement.

Recommended indicators to assess data sources:

Health surveys

- Country has a 10-year costed *survey plan* that covers all priority health topics and takes into account other relevant data sources.
- Two or more data points available for *child mortality* in the past five years.[1]
- Two or more population-based data points for *maternal mortality* in the past 10 years, including one in the past five years.
- Two or more data points for *coverage* of key health interventions in the past five years.
- One or more data point on *smoking* and *adult nutritional status* in the past five years.

1 Only relevant to countries without complete civil registration systems (>90% coverage of births and death).

Birth and death registration:

- *Birth registration* of at least 90% of all births (intermediate goal 50%). Indicator: percentage of births registered.
- *Death registration* of at least 90% of all deaths (intermediate goal 50%). Indicator: percentage of deaths registered.
- ICD-10 used in district hospitals and *causes of death* reported to national level.

Censuses

- *Census* completed within the past 10 years.
- *Population projections* for districts and smaller administrative areas available for the next 10 years, in print and electronically, and well documented.

Health facility reporting

- Number of *institutional deliveries* available, by district, and published within 12 months of the preceding year.
- *HIV prevalence* for relevant surveillance populations published within 12 months of the preceding year.
- Country *web site for health statistics*, with latest report and data available to the general public.
- Reporting of *notifiable diseases* makes use of modern communication technology, and reporting of statistics from district to national levels is web-based.
- At least 90% of the *districts* submit timely, complete, accurate reports to national level. Indicator: percentage of districts that submit timely, complete, accurate reports to national level.
- *Data quality assessments* carried out and published within the past three years, using internationally agreed quality criteria, such as Data Quality Assessment Framework (DQAF).
- *International Health Regulations* implemented according to international standards.

Health system resource tracking

- At least one *national health accounts* exercise completed in the past five years.
- National database with *public and private sector health facilities* and geocoding, available and updated within the past three years.
- National database with *health workers* by district and main cadres updated within the past two years.
- Annual data on availability of *tracer medicines and commodities* in public and private health facilities.

Recommended indicators to assess capacity for analysis, synthesis and validation of health data

- A designated and functioning *institutional mechanism* charged with analysis of health statistics, synthesis of data from different sources and validation of data from population-based and facility-based sources.
- A *national set of indicators* with targets and annual reporting to inform annual health sector reviews and other planning cycles.
- A national *microdata archive* for health surveys and census that is established and operational.
- Survey data used to assess and *adjust routine reports* from health facility on vaccinations, with the results published within 12 months of the preceding year.
- A *burden of disease* study conducted within the past five years, with a strong national contribution.
- A *health systems performance* assessment carried out within the past five years, with a strong national contribution.

Table 3.2 Summary of core indicators and scoring for Health Information Systems Performance Index (HISPIX)

Indicators	Definition	Data collection method	Scoring for HISPIX
Health surveys			
Country has a 10-year costed *survey plan* that covers all priority health topics and takes into account other relevant data sources.	Survey plan comprises modular contents with periodicity for specific indicators calibrated to achieve maximum sensitivity and efficiency. Includes data collection concerning health-related behaviours and bio-clinical measurements	Bureau of the Census, National Statistics Office and Ministry of Health	Yes: 1 No: 0
Two or more data points available for *child mortality* in the past five years[a]		Country reports, DHS[b] and MICS[c]	Yes: 1 No: 0
Two or more population-based data points for *maternal mortality* in the past 10 years, including one in the past five years[a]		Country reports, DHS and MICS	Yes: 1 No: 0
Two or more data points for *coverage* of key health interventions in the past five years	Comprising coverage of key maternal and child health-care interventions, risk behaviours and care-seeking	Country reports, DHS and MICS	Yes: 1 No: 0
One or more data points on *smoking and adult nutritional status* in the past five years	Nutritional status clinically measured	Country reports, DHS and MICS	Yes: 1 No: 0
Birth and death registration			
Birth registration of at least 90% of all births (intermediate goal 50%). Indicator: percentage of births registered	*Numerator:* number of births registered, as reported by civil or sample registration systems, hospitals and community-based reporting systems *Denominator:* total births for the same time period and geographical region. Where information on total births is not available because of incomplete civil registration, total births can be estimated by extrapolating from the census or on the basis of information about natality rates derived from population surveys	Civil registration or sample registration systems	<50% score 0 50–89% score 1 ≥90% score 2
Death registration of at least 90% of all deaths (intermediate goal 50%). Indicator: percentage of deaths registered	*Numerator:* number of deaths registered as reported by civil or sample registration systems, hospitals and community-based reporting systems *Denominator:* total deaths for the same time period and geographical region. Where information on total deaths is not available because of incomplete civil registration, total deaths can be estimated by extrapolating from the census or on the basis of information about mortality rates derived from population surveys	Civil or sample registration systems	<50% score 0 50–89% score 1 ≥90% score 2
ICD-10[d] used in district hospitals and causes of death reported to national level	*Numerator:* number of district hospitals using ICD-10 to certify cause of death *Denominator:* total district hospitals	Routine Health Management Information System HMIS reports	<50% score 0 50–89% score 1 ≥90% score 2

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Indicators	Definition	Data collection method	Scoring for HISPIX
Census			
Census completed within the past 10 years		Bureau of the Census, National Statistics Office and Ministry of Health	1
Population projections for districts and smaller administrative areas available for next 10 years, in print and electronically, well documented			1
Health facility reporting			
Number of *institutional deliveries* available, by district, and published within 12 months of preceding year	Includes deliveries in public, private and nongovernmental organization facilities	Country HMIS reports	1
HIV prevalence for relevant surveillance populations published within 12 months of preceding year		National Aids Committee reports	1
Country *web site for health statistics,* with latest report and data available to the general public		Country HIS[e] reports	1
Reporting of *notifiable diseases* makes use of modern communication technology, and reporting of statistics from district to national levels is web-based		Country HMIS reports	1
At least 90% of *districts* submit timely, complete, accurate reports to national level. Indicator: percentage of districts that submit timely, complete, accurate reports to national level	*Numerator:* number of health districts with timely and complete reporting of key data series *Denominator:* total districts Countries should define core data series that should be reported to districts by all facilities and compare reports against this list	Country HMIS reports	1
Data quality assessments carried out and published within the past three years, using internationally agreed quality criteria such as the Data Quality Assessment Framework (DQAF)	Assessment should routinely cover all administrative data sources (e.g. civil registration, facility reports) Assessment should use internationally agreed data quality criteria such as DQAF	Country HMIS reports	1
International Health Regulations (IHR) implemented according to international standards	Compliant with IHR monitoring and evaluation framework	Country health sector reports	1
Health system resource tracking			
At least one *national health accounts* exercise completed in the past five years		NHA[f] report	1
National database with *public and private sector health facilities* and geocoding, available and updated within the past three years	Database should separate public, private and non-profit facilities; it should also include key infrastructure, human resources, medicines, equipment and supplies, and service availability	Health facility assessments	1
National database with *health workers* by district and main cadres updated within the past two years	Database comprises data from multiple sources, including census, labour force surveys, professional registers, training institutions and facility assessments	National health sector review	1
Annual data on availability of *tracer medicines and commodities* in public and private health facilities	Aligned to national essential medicines list	Essential medicines reviews; health facility assessments	1

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Indicators	Definition	Data collection method	Scoring for HISPIX
Capacity for analysis, synthesis and validation of health data			
A designated and functioning *institutional mechanism* charged with analysis of health statistics, synthesis of data from different sources and validation of data from population-based and facility-based sources	Body should be administratively separate from programmes responsible for delivery of interventions. Should adhere to *Fundamental principles of official statistics*	National health sector reports	1
A *national set of indicators* with targets and annual reporting to inform annual health sector reviews and other planning cycles	Indicators cover key issues including health determinants, health system inputs, processes and outputs, use of health care services, mortality, morbidity, health system responsiveness, etc.	National health sector reports	1
A national *microdata archive* for health surveys and census established and operational			1
Survey data used to assess and *adjust routine reports* from health facility on vaccinations, with the results published within 12 months of the preceding year	Validation by an independent reviewer would be needed to ascertain the extent of analysis and validation	Information available from health statistics reports	1
A *burden of disease* study conducted within the past five years, with a strong national contribution			1
A *health systems performance* assessment carried out within the past five years, with a strong national contribution			1
Overall HISPIX			**30**

[a] Only relevant to countries without complete civil registration systems (>90% coverage of births and death).

[b] Demographic and Health Surveys.

[c] Multiple Indicator Cluster Surveys.

[d] *International statistical classification of diseases and related health problems, 10th revision (ICD-10)*. 2nd edition. Geneva, World Health Organization, 2005 (http://www.who.int/classifications/icd/en/).

[e] Health Information System.

[f] National Health Accounts.

3.7 Summary measure of health information system performance

WHO is proposing a Health Information System Performance Index (HISPIX) — a summary measure based on the above-mentioned standardized indicators for assessing data quality and the overall performance of the health information system. The score is calculated from information available in the public domain using standard indicators to enhance objectivity and comparability over time and across countries.

For the majority of the indicators, a simple binary scoring system ("yes" or "no") is used, with no weighting. For the few indicators that are measured in terms of percentages, the score is calculated as described in Table 3.2. The advantage of this approach is that it permits countries and development partners to identify key areas for improvement as part of a health information system strengthening plan.

The crucial difference between the HISPIX approach and the HMN self-assessment tool is that the indicators can be assessed on the basis of information that is largely available in the public domain. Information on data sources and data availability can be compiled from WHO databases and those of other international agencies. Information on inputs and resources is available from country health statistics reports and from the self-assessments conducted though HMN. For countries that have not conducted such assessments, it may be

necessary to gather information through WHO and other agency country offices and through direct contacts with country health information units and statistics offices.

Because of the relative ease of data collection, and because several of the indicators are amenable to relatively rapid change, it is suggested that the analysis be conducted every three years to gauge trends over time.

Efforts should continue, however, to link the independent assessment approach to self-assessment strategies, such as the HMN tool. This would help ensure continued country involvement and thus sustainability. Clear descriptions of data quality criteria and user-friendly checklists could be valuable tools in this regard.

Selected resources and tools

The following annotated references and links to key sources of standards, guidelines and quality criteria for different components of the health information system are not necessarily assessment tools in themselves; they offer guidance on quality criteria for various aspects of the health information system. The main focus is on ensuring data quality.

General health information systems assessment

Health Metrics Network. *Assessing the national health information system: an assessment tool, version 4.00*. Geneva, World Health Organization, 2008 (http://www.who.int/healthmetrics/tools/hisassessment/en/index.html, accessed 1 April 2010).

> This is a tool for conducting a systematic assessment of the existing national health information systems — both to establish a baseline and to monitor progress. The assessment is aligned with the standards for health information systems described in the HMN framework. The assessment covers the many subsystems of a national health information system, including public and private sources of health-related data. It addresses the resources available to the system (inputs), its methods of work and products (processes and outputs) and results in terms of data availability, quality and use (outcomes). All major stakeholders should participate in assessing the national health information system and planning for its strengthening. Stakeholders include the producers, users and financiers of health information and other social statistics at various national and sub-national levels: officials in government ministries and agencies; donors and development partners such as multilateral and bilateral agencies; nongovernmental organizations; academic institutions; professional associations; other users of health-related information such as parliamentarians; civil society (including health-related advocacy groups); and the media. The tool is also available as an electronic spreadsheet to facilitate scoring of the indicators.

Health surveys

United Nations Statistics Division. *Household sample surveys in developing and transition countries*. New York, NY, United Nations, 2005 (Series F, No. 96, sales number E.05.XVII.6; http://unstats.un.org/unsd/hhsurveys/, accessed 1 April 2010).

> This handbook describes standards for household surveys but is not an assessment tool. The publication presents the "state of the art" on important aspects of conducting household surveys in developing and transition countries, including sample design, survey implementation, non-sampling errors, survey costs, and analysis of survey data. The main objective of this handbook is to assist national survey statisticians to design household surveys in an efficient and reliable manner, and to allow users to make greater use of survey generated data.

MEASURE DHS. *Demographic and health surveys (DHS).* (http://www.measuredhs.com/, accessed 1 April 2010).

The USAID-supported surveys, implemented by ICF Macro, are based on specified standards and quality criteria. DHS has been conducted around the world for more than two decades. These nationally representative household surveys include large sample sizes (usually between 5000 and 30 000 households) and are generally conducted every five years to allow for comparisons over time. DHS staff members have advanced training in economics, sociology, behavioural psychology, statistics, management and social marketing.

Civil registration

United Nations Statistics Division. *Principles and recommendations for a vital statistics system, revision 2.* New York, NY, United Nations, 1998 (Series M, No. 19/Rev. 2, sales number 01.XVII.10).

This serves as a guide for national governments in establishing and maintaining reliable civil registration systems for legal documentation on events throughout the lifetime of individuals: birth, changes in marital status, and death. This book provides technical guidance on standards, concepts, definitions and classifications for civil registration and vital statistics to further increase the international comparability of data. Companion publications include the *handbooks on civil registration and vital statistics systems* issued by the United Nations over the past few years (http://unstats.un.org/unsd/demographic/standmeth/handbooks/default.htm#civilreg).

Censuses

United Nations Statistics Division. *Principles and recommendations for population and housing censuses (2008).* New York, NY, United Nations, 1998 (http://unstats.un.org/unsd/demographic/sources/census/census3.htm, accessed 1 April 2010).

This provides international principles and recommendations for use by national statistical offices and census officials throughout the world in planning and organizing a census.

Health facility reporting

Lafond A, Field R. *The PRISM: introducing an analytical framework for understanding performance of routine health information systems in developing countries*. Presented at: Workshop on Enhancing the Quality and Use of Health Information at the District Level, Eastern Cape Province, South Africa, 29 September–4 October 2003 (http://www.globalhealthcommunication.org/tool_docs/64/the_prism_introducing_an_analytic_framework_for_undersanding.pdf, accessed 1 April 2010).

PRISM (Performance of Routine Information System Management), has been developed by MEASURE Evaluation and John Snow, Inc. It is designed to assess routine, facility-based information and management systems while acknowledging the broader context in which such systems operate. It emphasizes strengthening routine health information system performance through better data quality and improved information use. PRISM broadens the analysis of performance to include three key categories of determinants that affect performance:

- behavioural determinants: the knowledge, skills, attitudes, values and motivation of the people who collect and use data;
- technical determinants: data collection forms, processes, systems and methods;

- organizational determinants: information culture, structure and resources and the roles and responsibilities of key contributors at each level of the health system.

Health system resource tracking

WHO/World Bank/USAID. *Guide to producing national health accounts with special applications for low-income and middle-income countries*. Geneva, World Health Organization, 2003 (ISBN 92 4 154607 7, NLM classification W 74.1; http://www.who.int/nha/docs/English_PG.pdf, accessed 1 April 2010).

This document guides the reader through the process of acquiring and evaluating data and provides step-by-step examples of how to convert raw numbers into information useful for policy analysis and development.

Assessment of data quality in national statistical systems

De Vries W. *How are we doing? Performance indicators for national statistical systems*. Washington, DC, International Monetary Fund, 1998 (http://dsbb.imf.org/vgn/images/pdfs/nld.pdf, accessed 1 April 2010).

This proposes a systems approach for evaluating the performance of national statistical offices and takes the view that there is a high correlation between the quality of a statistical system and the quality of its products. The United Nations *Fundamental principles of official statistics* is used as a general framework to assess the performance of national statistical offices; the guide provides a brief explanation of the principles and raises several operational questions related to each one.

Elvers E, Rosén B. Quality concept for official statistics. In: *Encyclopedia of statistical sciences*. Malden, MA, John Wiley & Sons, Inc., 1997 (Wiley InterScience Publication, http://dsbb.imf.org/vgn/images/pdfs/Encyc.pdf, accessed 1 April 2010).

Quality of statistics is defined by how well statistics meets users' needs and expectations for statistical information, once disseminated. The authors suggest that producers of official statistics should provide neutral, descriptive information about all aspects of statistics, so that users may assess their quality. They suggest the information be organized by main quality components, such as content, accuracy, timeliness, coherence (especially comparability), availability and clarity. Definitions of these components and their subcomponents are provided.

General data dissemination system (GDDS). Washington, DC, International Monetary Fund, 1995 (http://dsbb.imf.org/Applications/web/getpage/?pagename=gddswhatgdds, accessed 1 April 2010).

The GDDS framework is built around four dimensions — data characteristics, quality, access, and integrity — and is intended to provide guidance for the overall development of macroeconomic, financial, and socio-demographic data. The framework takes into account, across a broad range of countries, the diversity of their economies and the developmental requirements of many of their statistical systems.

Data quality assessment framework (DQAF). Washington, DC, International Monetary Fund, 2003 (http://dsbb.imf.org/vgn/images/pdfs/dqrs_factsheet.pdf; http://dsbb.imf.org/vgn/images/pdfs/dqrs_Genframework.pdf, accessed 1 April 2010).

Five dimensions of data quality: assurances of integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility, and a set of prerequisites for data quality are the centre of the IMF DQAF. The DQAF, which is used for comprehensive assessments of countries' data quality, covers institutional environments, statistical processes, and characteristics of the statistical products.

Fundamental principles of official statistics. New York, NY, United Nations, 1994 (http://unstats.un.org/unsd/methods/statorg/FP-English.htm, accessed 1 April 2010).

> These were adopted by the Statistical Commission in 1994. While not an assessment tool, the principles provide a general quality framework for national statistics offices to review performance, identify strengths and weaknesses, and make recommendations for improvement. The ten principles cover: relevance impartiality and equal access; professional standards and ethics; accountability and transparency; prevention of misuse; cost-effectiveness; confidentiality; legislation; national coordination; international standards; and international cooperation.

Implementation of the fundamental principles of official statistics. Report of the Secretary-General to the Thirty-fifth session of the United Nations Statistical Commission, 2–5 March 2004 (http://unstats.un.org/unsd/statcom/doc04/2004-21e.pdf, accessed 1 April 2010).

> The Statistical Commission has developed a questionnaire allowing national statistical offices to report their experiences with the fundamental principles in a uniform way. This report presents the main results of the survey on the implementation of the Fundamental Principles of Official Statistics conducted by the Division between May and November 2003.

Statistical capacity improvement in IDA countries: progress report. Washington, DC, The World Bank, 2006 (http://siteresources.worldbank.org/SCBINTRANET/Resources/Statistical_Capacity_Improvement_in_IDA_Countries-May16_2006.pdf, accessed 1 April 2010).

> This paper is the first progress report on statistical capacity improvement in IDA countries. It reports on improvements made by IDA member countries to their capacity to produce good quality official statistics. It also reviews the support given to countries by the World Bank and by other development partners, discusses key issues and constraints, and outlines plans for further work.

Assessment of data quality in international agencies

Quality dimensions, core values for OECD statistics and procedures for planning and evaluating statistical activities. Paris, Organisation for Economic Co-operation and Development, 2003 (STD/QFS(2003)1; http://www.oecd.org/dataoecd/26/38/21687665.pdf, accessed 1 April 2010).

> The guidelines aim to ensure that OECD published statistics meet specific quality criteria. Quality is defined as "fitness for use" in terms of user needs. Given the work already done by several statistical organisations, the OECD drew on their experience and adapted it to the Organisation's context. The OECD views quality in terms of seven dimensions: relevance; accuracy; credibility; timeliness; accessibility; interpretability; and coherence, which are described in this document.

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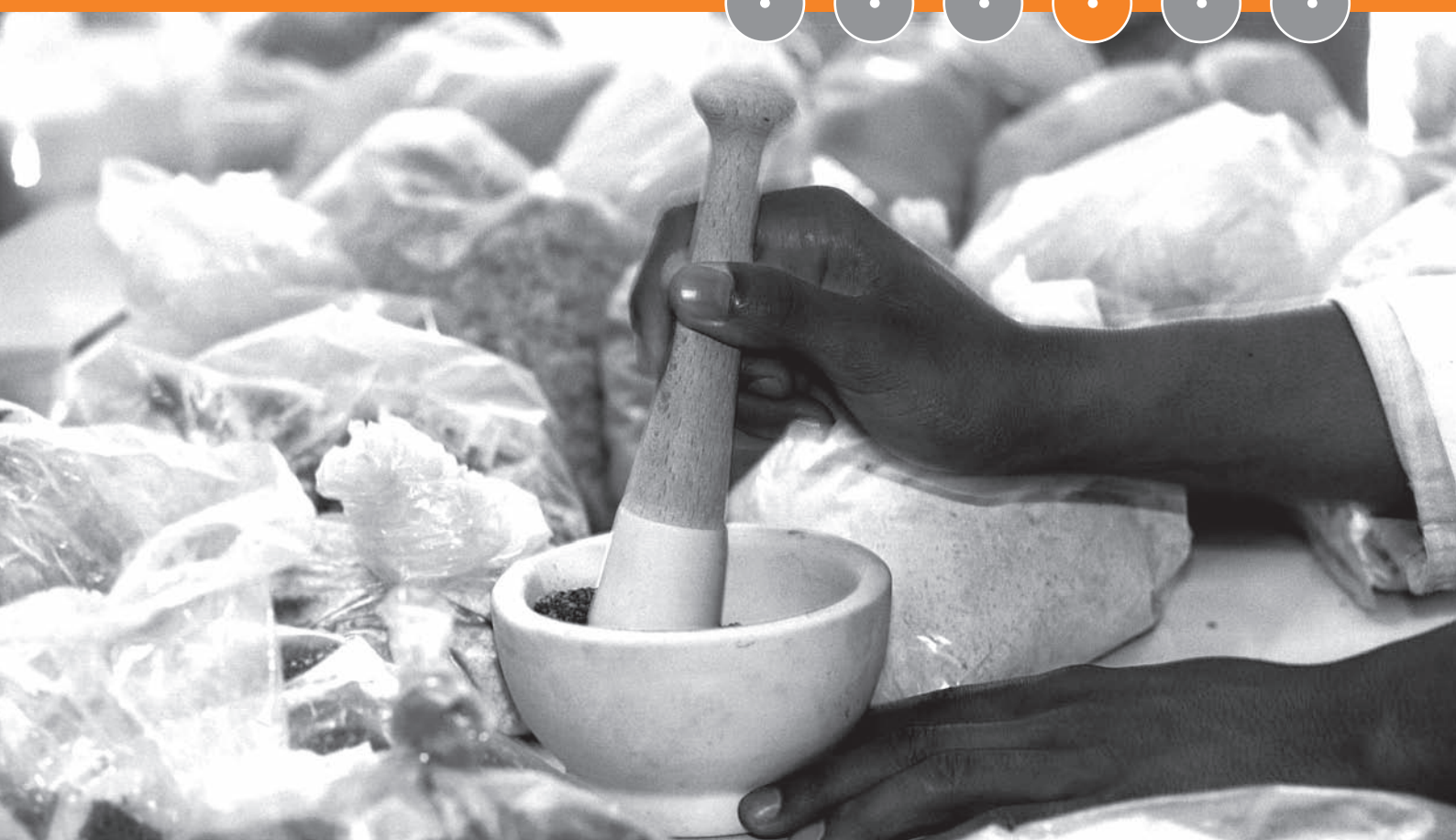
9. *Data quality assessment framework.* Washington, DC, International Monetary Fund (http://dsbb.imf.org/Applications/web/dqrs/dqrsdqaf/, accessed 1 April 2010).
10. *Mainstreaming sectoral statistical systems in Africa: a guide to planning a coordinated national statistical system. Version 1.0.* Tunis, African Development Bank, 2007 (http://www.paris21.org/documents/2959.pdf, accessed 1 April 2010).
11. Health Metrics Network 13th Board Meeting Document. Geneva, Health Metrics Network, 2009. (http://www.who.int/healthmetrics/HMN_13Board_Meeting_web1.pdf , accessed 19 May 2010).

4. Access to essential medicines



4.

Access to essential medicines

4.1 Introduction

According to the WHO framework for health systems *(1)*, a well-functioning health system ensures equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use. To achieve these objectives, the following are needed:

- national policies, standards, guidelines and regulations that support policy;
- information on prices, the status of international trade agreements and the capacity to set and negotiate prices;
- reliable manufacturing practices when they exist in-country and quality assessment of priority products;
- procurement, supply and storage, and distribution systems that minimize leakage and other waste; and
- support for rational use of medicines, commodities and equipment, through guidelines and strategies to assure adherence, reduce resistance, maximize patient safety and training.

Monitoring access to essential medicines is closely intertwined with at least two other building blocks: service delivery and governance. Health service delivery is discussed in Section 1 of this handbook while issues related to governance are dealt with in Section 6.

This section of the handbook focuses on essential medicines, i.e. those that satisfy the priority health care needs of the population. Essential medicines are intended to be available within the context of functioning health systems at all times, in adequate amounts, in the appropriate dosage, with assured quality, and at a price that individuals and the community can afford *(2)*.

Access to medicines is included in the Millennium Development Goals under MDG 8, and specifically *Target 8.E: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.*[1] Access has been defined as "having medicines continuously available and affordable at public or private health facilities or medicine outlets that are within one hour's walk of the population" (*3*). Given its complexity, an overall picture of access to medicines can only be generated using a range of indicators that provide data on medicine availability and price, in both public and private sectors, in combination with key policy indicators. Recent United Nations reports, that assessed progress towards MDG target 8.E, found that low availability, high prices and poor affordability of medicines are key impediments to treatment access in low- and middle-income countries *(4,5)*.

1 Official List of Millennium Development Indicators, effective 15 January 2008. http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm, accessed 15 April 2010.

4.2 Sources of information on access to essential medicines

Facility surveys

A general facility survey usually focuses on a wide range of key health services and collects information on facility infrastructure, equipment and supplies, support systems, management systems and providers' adherence to standards. The collection of data on the availability of essential medicines and commodities and on the use of these medicines is an essential part of such surveys.

WHO and Health Action International (HAI) have developed a standardized methodology[2] for facility-based surveys of medicine prices, availability, affordability and price components *(6, 7)*. In the survey, data on the availability and price of approximately 50 medicines is collected through visits to medicines outlets in the public sector, private sector and any other sectors that serve as important medicine dispensing points (e.g. NGOs, mission hospitals). The list of survey medicines includes 14 medicines in use worldwide (Table 4.1) and 16 regionally specific medicines. In addition, countries are encouraged to collect data on a further 20 medicines of national importance. For each medicine, data are collected on the originator brand and the lowest-priced generic equivalent found at each medicine outlet. Government procurement prices are also collected, as are the add-on costs that are charged to medicines as they proceed through the supply and distribution chain. The survey is conducted by trained data collectors, following which data is double-entered into a pre-programmed Excel workbook that allows for standardized analysis. Treatment affordability is estimated by comparing medicine costs to the daily wage of the lowest-paid unskilled government worker.

Table 4.1 Global core list of medicines included in WHO/HAI surveys

	Indication	Medicine name[a]	Strength	Dosage form
1	Asthma	Salbutamol	0.1 mg/dose	inhaler
2	Diabetes	Glibenclamide	5 mg	capsule/tablet
3	Cardiovascular disease	Atenolol	50 mg	capule/tablet
4	Cardiovascular disease	Captopril	25 mg	capsule/tablet
5	Cardiovascular disease	Simvastatin	20 mg	capsule/tablet
6	Depression	Amitriptyline	25 mg	capsule/tablet
7	Infectious disease	Ciprofloxacin	500 mg	capsule/tablet
8	Infectious disease	Co-trimoxazole	8+40 mg/ml	suspension
9	Infectious disease	Amoxicillin	500 mg	capsule/tablet
10	Infectious disease	Ceftriaxone	1 g/vial	injection
11	Central nervous system diseases	Diazepam	5 mg	capsule/tablet
12	Pain/inflammation	Diclofenac	50 mg	capsule/tablet
13	Pain/inflammation	Paracetamol	24 mg/ml	suspension
14	Ulcer	Omeprazole	20 mg	capsule/tablet

[a] Medicine names may be spelt differently in different countries.

2 A detailed description of the methodology, as well as country-specific data and reports, can be found at http://www.haiweb.org/medicineprices/, accessed 23 May 2010.

Integration of a list of tracer medicines in larger facility censuses or surveys would be desirable. This would allow more regular monitoring and integration with other data on health services, such as infrastructure and human resources. A list of medicines has been proposed by various disease programmes in WHO for inclusion in the service availability and readiness assessment methodology (see Annex to this section) *(8)*. It is recommended that all surveys collect, at a minimum, data on the global list of 14 medicines included in WHO/HAI surveys. The inclusion of additional medicines should be based on national treatment guidelines, local disease patterns and other priorities. Where possible, the use of the WHO/HAI methods of collecting, entering and analysing data are strongly encouraged.

In addition to the availability and price of medicines, it is also important to assess the quality of use aspects, such as appropriate prescription practices, rational medicine use and user adherence. This requires a more extensive assessment of practices in facilities, including record reviews, exit interviews and observation of patients and providers. There are three categories of indicators for which data are collected *(9)*:

1. prescribing indicators (average number of medicines prescribed per encounter, percentage of medicines prescribed by a generic name, percentage of encounters with an antibiotic prescribed, percentage of encounters with an injection prescribed, percentage of medicines prescribed from essential medicines list);
2. patient care indicators (average consultation time, average dispensing time, percentage of medicines actually dispensed, percentage of medicines adequately labelled, the patient's knowledge of correct dosage);
3. facility indicators (availability of a copy of essential medicines list of formulary, availability of key medicines).

A recently conducted quantitative review of studies published between 1990 and 2007, (that reported common indicators of medicines use) reported on medicines use in developing and transitional countries, and on the impact of interventions undertaken to improve medicines use, by analysing data from 679 studies conducted in 97 countries *(10)*.

To accompany the *Questionnaire on structures and processes of country pharmaceutical situations*, WHO has developed a set of facility-level indicators to measure key outcomes of these structures and processes in the areas of access, product quality and rational use *(11, 12)*.

- Access is measured in terms of the availability and affordability of essential medicines.
- Quality is represented by the absence of expired stock on pharmacy shelves and adequate handling and conservation conditions.
- Rational use is measured by examining prescribing and dispensing practices and the implementation of strategies that have been shown to support rational use, such as standard treatment guidelines and the essential medicines list.

These indicators are measured with standardized collection instruments in public health facilities, private drug outlets and in warehouses supplying the public sector, through the *Survey of Medicine Prices, Availability, Affordability and Price Components (6)*. Surveys of 30 public health facilities and their dispensaries gathered information about the availability of essential medicines, medicine prices, adequacy of conservation conditions, affordability, prescribing and dispensing habits, and presence of guidelines. A similar survey of five warehouses supplying the public sector also examined availability, stockout duration, and adequacy of conservation conditions. Surveys of 30 private pharmaceutical outlets assessed the availability, affordability and prices of medicines.

Key informant surveys

Surveys by experts with extensive knowledge about the medicines situation in a country can be used to generate information about pharmaceutical policies and practices related to regulation, selection of essential medicines, as well as procurement and use. While this method has a low cost and is relatively easy to implement, the disadvantage is its subjectivity, which introduces measurement errors and affects comparability both between countries and over time within the same country.

Data on national medicines policies and their components (including legislation and regulations, quality control of medicines, essential medicines lists, supply systems, financing, access to medicines, production, rational use, and protection of intellectual property rights) can be obtained from the WHO *questionnaire on structures and processes of country pharmaceutical situations (8, 9)*. The questionnaire is a basic assessment tool that provides a rapid means of obtaining information on the existing infrastructure and key processes of each component of the pharmaceutical sector. Data are collected through a country data collection instrument that are used to generate a Pharmaceutical Country Profile . The national coordinator identifies responsible people, government agencies or groups who can provide responses and source documents related to the different pharmaceutical sections/areas in the data collection instrument.

4.3 Core indicators

The recommended core indicators to measure access to essential medicines are as follows.

Recommended core indicator 1: Average availability of 14 selected essential medicines in public and private health facilities

Definition

The average percentage of medicines outlets, where a selection of essential medicines are found on the day of the survey.

Data collection methodology

National surveys[3] of medicine price and availability conducted using a standard methodology developed by WHO and Health Action International.[4] Data on the availability of a specific list of medicines are collected from six geographic or administrative areas in a sample of medicine dispensing points.

Periodicity of measurement

In the absence of routine monitoring, it is recommended that a national survey of medicine prices and availability be conducted every three to five years using the WHO/HAI standard methodology.

3 In large countries such as India and China, sub-national surveys have been conducted.

4 http://www.haiweb.org/medicineprices/manual/documents.html, accessed May 23, 2010.

Recommended core indicator 2: Median consumer price ratio of 14 selected essential medicines in public and private health facilities

Definition

Consumer price ratios are calculated as the ratio between median unit prices (e.g. price per tablet or therapeutic unit) and Management Sciences for Health (MSH) median international reference prices[5] for that exact product for the year preceding the survey.

Data collection methodology

National surveys of medicine price and availability conducted using a standard methodology developed by WHO and HAI. Data on the price of a specific list of medicines are collected in six geographic or administrative areas in a sample of medicine dispensing points.

Periodicity of measurement

In the absence of routine monitoring, it is recommended that a national survey of medicine prices and availability be conducted every three to five years using the WHO/HAI standard methodology.

4.4 Additional indicators for a full pharmaceutical profile

In addition to the core indicators, the following indicators are recommended should a country wish to undertake a full pharmaceutical profile. These are in line with the monitoring of progress towards MDG indicator 8.13 — the proportion of population with access to affordable essential medicines on a sustainable basis — that has been reported by the United Nations in 2008 *(4)* and 2009 *(5)* using a set of nine structural and process indicators proposed by WHO to quantify access (see summary in Table 4.2).

Recommended indicator 1: Access to essential medicines/technologies as part of the fulfillment of the right to health, recognized in the constitution or national legislation

Definition

Whether or not access to essential medicines/technologies is recognized in the constitution or national legislation as part of the progressive realization of the right to health and/or as a specific entitlement of all citizens.

Data collection methodology

This indicator necessitates a review of the national constitution or legislation. At the international level, such a review was conducted by WHO in 2008.

Periodicity of measurement

The data are not likely to change frequently over time. Four-yearly national updates are envisaged as part of WHO's global pharmaceutical surveys.

5 MSH international reference prices have been selected as a comparator as they are widely available, updated frequently, and relatively stable over time. They represent median prices of high quality multi-source medicines offered to developing and middle-income countries by different suppliers. The large majority of MSH prices are for multi-source products, and are usually 'Ex-Works' prices.

Recommended indicator 2: Existence and year of last update of a published national medicines policy

Definition

Existence of an official National Medicines Policy (NMP), expressed as a yes/no indicator, and updated within the past five years.

Data collection methodology

Key informant surveys with a standard tool, such as the WHO *Questionnaire on structures and processes of country pharmaceutical situations*.

Periodicity of measurement

Every four years.

Recommended indicator 3: Existence and year of last update of a published national list of essential medicines

Definition

Existence of an essential medicines list expressed as a yes/no indicator and updated within the past five years.

Data collection methodology

Key informant surveys with a standard tool, such as the WHO *Questionnaire on structures and processes of country pharmaceutical situations*.

Periodicity of measurement

Every four years.

Recommended indicator 4: Legal provisions to allow/encourage generic substitution in the private sector

Definition

Existence of legal provisions to allow generic substitution in the private sector, expressed as a yes/no indicator.

Data collection methodology

Key informant surveys with a standard tool, such as the WHO *questionnaire on structures and processes of country pharmaceutical situations*.

Periodicity of measurement

Every four years.

Recommended indicator 5: Public and private per capita expenditure on medicines

Definition

The reference indicator is total pharmaceutical expenditure (TPE). It may be defined as the total consumption of pharmaceuticals, regardless of the distribution mean, the place or condition of consumption or its type (prescription or over-the-counter). Per capita data are obtained from the whole population. As much as possible, this indicator is disaggregated into two components to reflect public and private sector financing. Public financing refers to social security, territorial governments, and extrabudgetary entities combined, while private financing includes out-of-pocket spending, finances related to private insurance, nongovernmental organizations, and corporations (excluding social security).

Data collection methodology

Data on medicines expenditures can be obtained from National Health Accounts (NHA),[6] which is a systematic, comprehensive, and consistent monitoring of resource flows in a country's health system for a given period. The NHA is designed to capture the full range of information contained in resource flows and reflects the main functions of health care financing, such as resource mobilization and allocation, pooling and insurance, purchasing of care, and the distribution of benefits. More information on NHA can be found in Section 5 of this toolkit, *health systems financing*. While the NHA has different tables with the same content from various approaches, TPE should be the basis of the estimation for this indicator.

Periodicity of measurement

Periodicity is dependant on collection of NHA data; annually for most countries.

Recommended indicator 6: Percentage of population covered by health insurance

Definition

Numerator: Number of people covered by health insurance.
Denominator: Total number of population.

Data collection methodology

Household survey. For example, data on insurance coverage has been reported using data from the World Health Survey 2004.[7]

Recommended core indicator 7: Percentage mark-up between manufacturers' and consumer prices

Definition

How much the final medicine price is greater, in percentage, above the manufacturer's selling price or the cost, insurance and freight price.

6 http://www.who.int/nha/en/, accessed May 23, 2010.

7 http://www.who.int/healthinfo/survey/en/index.html, accessed May 23, 2010.

Data collection methodology

National surveys of medicines prices and availability conducted using a standard methodology developed by WHO and HAI. Data on the add-on costs that contribute to the final price of medicines are collected by tracking selected tracer medicines through the supply and distribution chain.

Periodicity of measurement

It is recommended that a national survey of medicines prices and availability be conducted every three to five years using the WHO/HAI standard methodology.

Table 4.2 Summary of indicators for a full pharmaceutical profile, including core indicators for access to essential medicines

Indicators	Data collection method
Structure	
1. Access to essential medicines/technologies as part of the fulfilment of the right to health, recognized in the constitution or national legislation.	Review of national constitution or legislation.
2. Existence and year of last update of a published national medicines policy.	Key-informant surveys using standard tool such as the WHO *Questionnaire on structures and processes of country pharmaceutical situations.*
3. Existence and year of last update of a published national list of essential medicines	
4. Legal provisions to allow/encourage generic substitution in the private sector	
Process	
5. Public and private per capita expenditure on medicines	National Health Accounts
6. Percentage of population covered by health insurance	Household surveys
7. Average availability of 14 selected essential medicines in public and private health facilities*	National (or sub-national when necessary) surveys of medicine price and availability conducted using a standard methodology developed by WHO and Health Action International.
8. Median consumer price ratio of 14 selected essential medicines in public and private health facilities*	
9. Percentage mark-up between manufacturers' and consumer prices	

* Core indicators to measure access to essential medicines.

Selected tools

Measuring medicine prices, availability, affordability and price components, 2nd ed. Geneva, World Health Organization and Health Action International, 2008 (http://apps.who.int/medicinedocs/index/assoc/s14868e/s14868e.pdf, accessed on 4 April 2010).

This second edition includes updated versions of the survey manual, an automated data workbook, survey instruments and a CD ROM of survey tools and background materials, all of which have been refined based on the lessons learnt in the 50+ surveys conducted to date.

WHO operational package for monitoring and assessing country pharmaceutical situations. Guide for coordinators and data collectors. Geneva, World Health Organization, 2007. (http://www.who.int/medicines/publications/WHO_TCM_2007.2/en/index.html, accessed on 4 April 2010).

This operational package is a tool for researchers, policy-makers, planners and others who need to use standardized measurement tools to gather data and other information for monitoring and assessing country

pharmaceutical situations. Level I questionnaire can be used as a checklist to illustrate sectoral structures, strategies and approaches. Countries can also use selected forms from the Level II facility survey in their routine monitoring. The results can help focus their strategies, advocacy plans and information campaigns.

Note This package is being updated and a new version will be published in early 2011

How to investigate drug use in health facilities. Geneva, World Health Organization, 1993 (http://apps.who.int/medicinedocs/en/d/Js2289e/, accessed on 4 April 2010).

This manual defines a limited number of objective measures that can describe the medicine use situation in a country, region or individual health facility. The medicine use indicators described are intended to measure specific aspects of the behaviour of health providers in health facilities in a reproducible manner.

Logistics indicators assessment tool (LIAT). Arlington, VA, USAID DELIVER Project, 2008 (http://deliver.jsi.com/dhome/topics/monitoring/monitoringpubs/meresources/metools, accessed on 4 April 2010).

This quantitative data collection instrument, developed by the USAID DELIVER project, helps assess health commodity logistics system performance and commodity availability at health facilities. A detailed user guide is included.

Logistics system assessment tool (LSAT). Arlington, VA, John Snow Inc./DELIVER for the United States Agency for International Development, revised ed., 2008 (http://deliver.jsi.com/dhome/topics/monitoring/monitoringpubs/meresources/metools, accessed on 4 April 2010).

This qualitative data collection instrument provides a comprehensive system-level assessment of logistics system performance for any programme that manages a health commodity.

Further reading

WHO *model list of essential medicines*. 16th List, March 2009–Unedited version. (http://www.who.int/selection_medicines/committees/expert/17/WEB_unedited_16th_LIST.pdf, accessed on 4 April 2010).

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4. *Delivering on the global partnership for achieving the Millennium Development Goals. MDG gap task force report 2008.* New York, United Nations, 2008. (http://www.who.int/medicines/mdg/MDG8EnglishWeb.pdf, accessed 4 April 2010).
5. *Strengthening the global partnership for development in a time of crisis. MDG gap task force report 2009.* New York; United Nations: 2009 (http://www.un.org/millenniumgoals/pdf/MDG_Gap_%20Task_Force_%20Report_2009.pdf, accessed 2 April 2010).
6. *Measuring medicine prices, availability, affordability and price components,* 2nd ed. Geneva, World Health Organization and Health Action International, 2008 (http://www.haiweb.org/medicineprices/manual/documents.html, accessed 2 April 2010).

7. Cameron A, Ewen M, Ross-Degnan D, Ball D, Laing R. Medicine prices, availability, and affordability in 36 developing and middle-income countries: a secondary analysis. *Lancet* 2009; 373: 240-49.

8. *WHO service availability and readiness assessment methodology*, upcoming, http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/, accessed 23 May 2010.

9. *How to investigate drug use in health facilities.* Geneva, World Health Organization, 1993 (http://apps.who.int/medicinedocs/pdf/s2289e/s2289e.pdf, accessed 2 April 2010).

10. *Medicines use in primary care in developing and transitional countries. Factbook summarizing results from studies reported between 1990 and 2006.* Geneva, World Health Organization, 2009 (http://apps.who.int/medicinedocs/documents/s16073e/s16073e.pdf , accessed 2 April 2010).

11. WHO, Harvard Medical School and Harvard Pilgrim Health. *Using indicators to measure country pharmaceutical situations: Fact book on WHO Level I and Level II monitoring indicators.* Geneva, World Health Organization, 2006 (http://apps.who.int/medicinedocs/index/assoc/s14101e/s14101e.pdf, accessed 4 April 2010).

12. *WHO operational package for monitoring and assessing country pharmaceutical situations. Guide for coordinators and data collectors.* Geneva, World Health Organization, 2007 (To be updated in 2011) (http://www.who.int/medicines/publications/WHO_TCM_2007.2.pdf, accessed 4 April 2010).

Annex. Recommended list of medicines for inclusion in the WHO service availability and readiness assessment methodology

Core medicines to be included in all surveys

Amitriptyline 25 mg capsule/tablet
Amoxicillin 500 mg capsule/tablet
Atenolol 50 mg capsule/tablet
Captopril 25 mg capsule/tablet
Ceftriaxone 1 g/vial injection
Ciprofloxacin 500 mg capsule/tablet
Co-trimoxazole 8+40 mg/ml suspension
Diazepam 5 mg capsule/tablet
Diclofenac 50 mg capsule/tablet
Glibenclamide 5 mg capsule/tablet
Omeprazole 20 mg capsule/tablet
Paracetamol 24 mg/ml suspension
Salbutamol 0.1 mg/dose inhaler
Simvastatin 20 mg capsule/tablet

Additional medicines to be considered for inclusion

Infectious diseases

1. Co-trimoxazole (capsule/tablet)
2. Fluconazole
3. Albendazole or Mebendazole (depending on country standards)
4. Metronidazole

Chronic diseases

1. Enalapril (depending on country standards)
2. Beclometasone (inhaler)
3. Metformin
4. Insulin (injection)

Other

1. Ibuprofen
2. Oral rehydration salts (sachets)
3. Measles vaccine

Reproductive health

1. Oral contraceptive pills (combined)
2. Injectable contraceptives (progestin-only)
3. Condoms (male)
4. Oxytocin (injection)
5. Magnesium sulphate (injection, eclampsia)
6. Diazepam (injection)

Malaria

1. ACT, Artemeter + Lumefantrine
2. SP, Sulphadoxine + Pyrimethamine
3. Quinine (oral or injectable)
4. Other antimalarial medicines (oral or injectable)

Tuberculosis

1. Ethambutol
2. Isoniazid
3. Pyrazinamide
4. Rifampicin
5. Streptomycin (injectable)
6. Isoniazid + Rifampicin (2FDC)
7. Isoniazid + Ethambutol (EH) (2FDC)
8. Isoniazid + Rifamipicin + Pyrazimamide (RHZ) (3FDC)
9. Isoniazid + Rifamipicin + Pyrazimamide + Ethambutol (4FDC)

Antiretrovirals

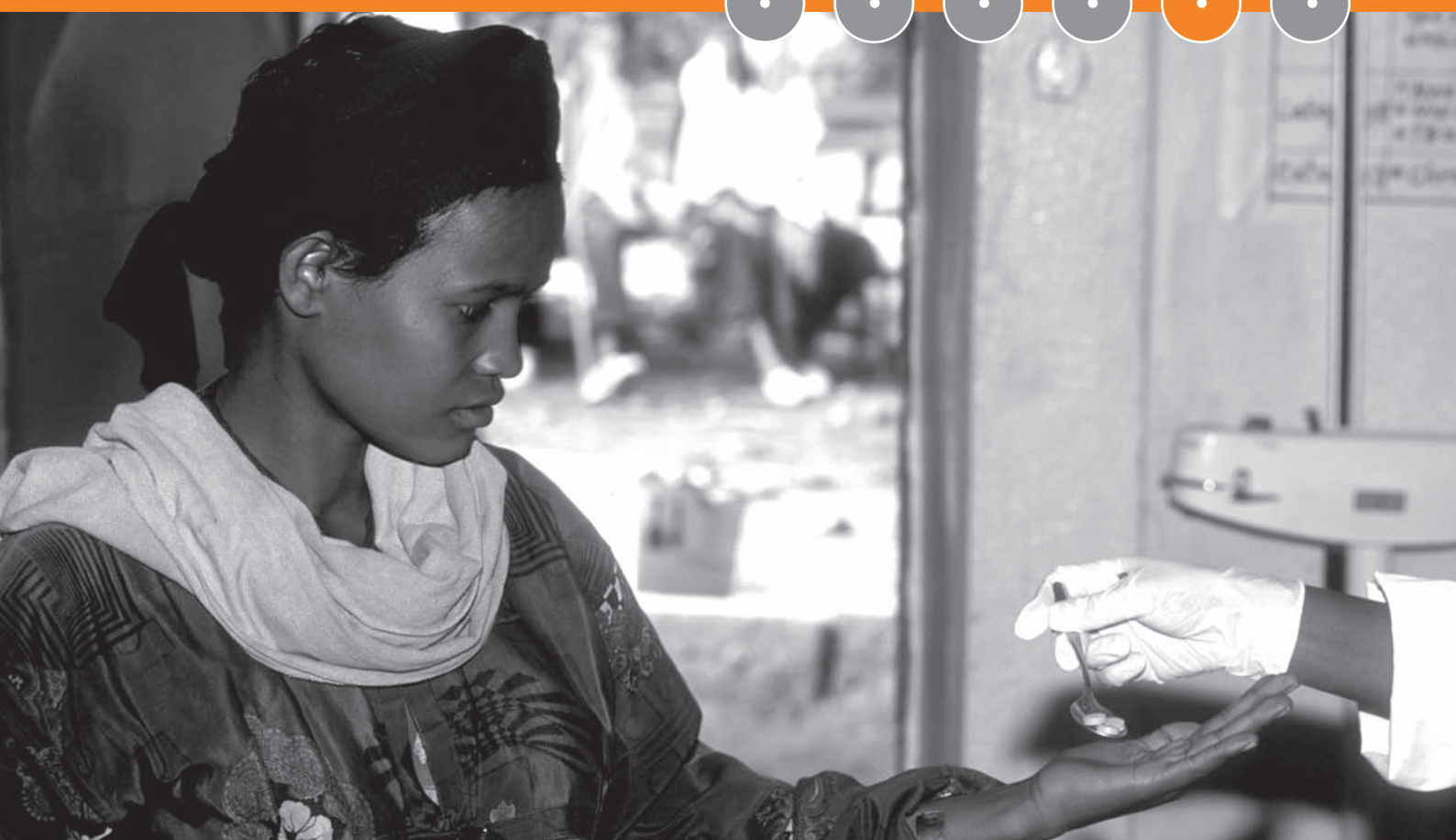
1. Zidovudine (AZT, ZDV)
2. Abacavir (ABC)
3. Didanosine (DDI)
4. Eifravenz (EFZ)
5. Lamivudine (3TC)
6. Nevirapine (NVP)
7. Stavudine 40 or 30(d4T)
8. D4T + 3TC
9. D4T + 3TC + NVP
10. AZT + 3TC
11. AZT + 3TC + ABC
12. AZT + 3TC + NVP
13. Tenofovir + Disoproxil fumarate (TDF/Viread)
14. TDF + Emtricitabine (FTC)
15. TDF + 3TC
16. TDF + 3TC + EFV
17. TDF + FTC + EFV

Protease inhibitors

1. Atazanavir (ATV)
2. Indinavir (IDV)
3. Lopinavir/Ritonavir (LPV/RTV)
4. Nelfinavir (NFV)
5. Ritonvir (RTV)
6. Saquinavir (SQV)

Source: Service availability and readiness assessment methodology, upcoming, http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/

5. Health systems financing



5.

Health systems financing

5.1 Introduction

Health financing is fundamental to the ability of health systems to maintain and improve human welfare. At the extreme, without the necessary funds no health workers would be employed, no medicines would be available and no health promotion or prevention would take place. However, financing is much more than a simple generation of funds (see Box 5.1). To understand the nature of indicators that can be used to monitor and evaluate health systems financing requires explicit assessment of what it is expected to achieve.

Box 5.1 What is health financing?

Health financing refers to the "function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system… the purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care" (*1*).

While the goals of health systems financing can be expressed in various ways, there is a general consensus that it should not only seek to raise sufficient funds for health, but should do so in a way that allows people to use the needed services without the risk of severe financial hardship (often called financial catastrophe or impoverishment).[1] This involves the accomplishment of two related objectives: (i) to raise sufficient funds and (ii) to provide financial risk protection to the population. These objectives can be achieved more easily if the available funds are used efficiently, highlighting the need for a third objective, that of efficiency in resource utilization. As a result, the financing system is often divided conceptually into three inter-related functions — (i) revenue collection, (ii) fund pooling, and (iii) purchasing/provision of services. Before focusing on measurement strategies and indicators for these functions it is important to understand their key components.

In most low-income and many middle-income countries, revenue collection derives from a mix of domestic and external sources. Despite the substantial increases in external assistance for health since 2000, the available resources are still insufficient in most low-income settings to assure universal coverage with even a very basic set of needed interventions. The adjustment of Commission on Macroeconomics and Health estimates of the cost of a core package to current prices reveals a need for around US$ 40 per person per year. This is an

1 In 2005, WHO Member States endorsed a resolution urging governments to develop health financing systems aimed at attaining and maintaining "universal coverage" — described as raising sufficient funds for health in a way that allows access to needed services without the risk of a financial catastrophe.

underestimate for many reasons,[2] but even then, almost a third of the 193 member countries of WHO did not have access to even this level of funding in 2005, and 33 spend less than US$ 25 per person per year despite increased external inflows. An ideal indicator for revenue collection would need to capture the amount and adequacy of the funds that are raised.

Financial risk protection is determined by how funds are raised, and whether and how they are pooled to spread the risk across population groups. Direct user-charges, for example, are regressive, i.e. the rich pay the same fees as the poor, which deters some people from seeking or continuing care. The funds also do not provide financial risk protection, in that people pay when they are sick and do not pay when they are healthy. As a result of this lack of solidarity, some people incur financial hardships and may even be pushed below the poverty line. A financing policy must grapple with the question of how to raise funds equitably, which usually implies a degree of progressivity (where the rich contribute a higher proportion of their income than the poor). It also needs to consider how to ensure access to needed services while protecting people against the more severe financial consequences of paying for care. These goals cannot be achieved without some form of prepayment and the subsequent pooling of the collected revenues, i.e. people pay into a pool when they are healthy and can draw on these funds when they are sick. Pooled funds can be derived from tax or health insurance contributions and in most countries they come from a mix of sources. Indicators in this area need to capture the extent to which people are protected from the financial risks associated with ill health. It would also be valuable to measure the extent of progressivity in the way that prepaid funds for health (e.g. taxes and insurance premiums) are raised.

Ensuring efficiency in resource use is a complex issue that should address questions on how to reduce waste and corruption; what interventions should be available for the existing resources; whether services should be provided by the government or purchased from the non-government sector; how providers (e.g. health workers, hospitals, etc.) should be paid to ensure quality and efficiency; and whether specific types of services or incentives should be targeted at the poor. Thus, because of the multiple dimensions, it is not particularly easy to define a single, easily understandable indicator of efficiency for health system financing.

5.2 Sources of information on health systems financing

A national government's total budget and the part allocated to health are both usually public information, and can be used to evaluate the government's total commitment to health as well as in proportion to other priorities. A planned budget however, while an important indicator of commitment, can differ significantly from the funds that are eventually released to departments and the subsequent expenditures.

In most countries, information on government health expenditures channelled through the ministry of health is usually available through the ministry of finance or regional authorities in decentralized systems. However, information on government health expenditures that are channelled through non-health ministries, such as military or police health services, are sometimes more difficult to obtain. While budget information is available in "real time", there is often a delay of perhaps about a year in the production of consolidated expenditure accounts. Public expenditure reviews, if available, are often an excellent source of information. These reviews collate information from various sources that help to determine whether government expenditures follow the budget plans and stated strategic objectives. Sometimes these reviews seek to examine the efficiency of resource

2 The original estimates did not include antiretroviral drugs for HIV, interventions for non-communicable diseases or a variety of health system strengthening costs essential to being able to deliver the package. Moreover, it assumes that only the interventions in the core set will be provided.

use, though in very broad terms, as well as the ability of the financial management and accounting systems and institutions to track expenditures.[3]

Information on commitments to official development assistance for health made by donor countries, international organizations and some foundations have been collated by the OECD for many years and reported since 2002.[4] However, this information, which is available by donor and by recipient country, should be used cautiously. Firstly, a part of the reported disbursements (and a large part in some cases) does not reach the recipient countries and should not be included in estimates of country health expenditure. These include payments for technical support to countries, payments generally made to nationals of countries other than the recipient country, and funds that are generally spent outside the recipient country. Secondly, there is an increasing move towards general budget support to countries, which is difficult to allocate to the different sectors. General budget support is reported in a separate section in the OECD database, and a method of allocation between the different sectors needs to be devised. Thirdly, emerging donors such as China and India, and some private philanthropists, are not included in the database.

It is better to track expenditure from external sources at the country level, but this is often difficult especially where this funding is channelled through non-governmental organizations (NGOs) or the private sector. Many countries do not require external donors or NGOs to report their in-country expenditures, or if they are required to submit budgets with proposals at the time they gain permission to work in the country, there is no database where this information is systematically captured nor where actual expenditures are recorded. This also applies to domestic NGOs and other charitable organizations supporting the health sector, where it is often difficult to track expenditures.

National-level expenditures as a result of third-party payments (e.g. from insurance and/or social security) may be available from fund managers. If third-party payers are primarily small community-based organizations, such as community-based health insurance funds, then compiling expenditure information is much more difficult.

Information on household out-of-pocket expenditures is only available from household surveys. The World Bank has sponsored Living Standards Measurement Surveys since 1980 from which information on household health expenditures can be extracted,[5] and World Health Surveys sponsored by WHO in 2000-2001[6] also contain a household expenditure module.[7] Many countries undertake household income and/or expenditure surveys from which information on health expenditures can be gleaned. There is considerable variability in the types of questions used to obtain household health expenditures, which makes comparisons over time and across countries difficult. As a long-term goal it is important to choose a standard instrument that would enhance comparability, either for independent surveys or to piggyback onto other household surveys carried out for other reasons.

National Health Accounts

The best source of health expenditure data is from NHA, which combines expenditure data from all sources and through all types of financial agents. The System of Health Accounts (SHA) developed by the OECD for

3 Probably the bulk of public expenditure reviews have been sponsored by the World Bank and UK Department For International Development to date — see, for example, http://www.opml.co.uk/services/public_expenditure_reviews/index.html.

4 http://stats.oecd.org/wbos/Default.aspx?usercontext=sourceoecd

5 http://www.worldbank.org/LSMS

6 http://www.who.int/healthinfo/survey/whsresults/en/index.html

7 Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) include modules on household assets, but not expenditures.

its countries has become the international classification standard although some country analysts prefer to use variations on this theme, including an approach called 'national account sub-accounts'. In general, it is possible to modify the figures emerging from one method to make them consistent with the other. Recently, the WHO, World Bank and USAID jointly developed a guide to undertake NHA in low-income countries based on SHA, adapted to meet the needs of low-income countries.[8] Application of the methods in a variety of settings has resulted in a group effort between the OECD, Eurostat and WHO to revise the SHA with the goal of making it more appropriate to countries at all income levels.[9]

National Health Accounts studies vary among countries — some countries have undertaken regular NHA studies, some have undertaken one or two studies but not regularly, while still others have yet to undertake a full NHA exercise. In the last case, data on health expenditures need to be collated from various sources. WHO works with countries to collate information from these sources, which combined with the information provided by countries who have undertaken NHA studies, allows annual reports of selected health expenditure aggregates for 192 of its 193 member countries.[10] These figures also form the basis of the health expenditure data reported in the World Bank's World Development Indicators.[11]

Various organizations provide support to countries seeking to develop better information on health expenditures, such as the USAID's Health Systems 20/20 project, WHO and the Swedish International Development Cooperation Agency. However, full NHA analyses have yet to be institutionalized in all countries.

5.3 Core indicators

Building on the discussion in Section 1, the core indicators for the availability of funds and the extent of financial risk protection have been agreed on at various fora.[12]

Recommended core indicator 1a: Total expenditure on health

This indicator provides information on the overall availability of funds. Sufficiency must be considered as a second step, in relation to country-specific estimates of the funds needed to ensure access to the desired level of services, or in terms of comparisons with other countries with similar levels of gross domestic product (GDP) per head. Some countries also seek to compare their total expenditure on health as a proportion of GDP with those in other countries. This is included in Table 5.1 as a possible additional indicator.

Definition

- *Numerator:* The sum of all health expenditures (ideally from NHA and including all sources of funds — external, government, and non-government including household out-of-pocket payments).
- *Denominator:* Total population.

Data collection methodology

Data collection is through country-specific reporting by the ministry of finance/ministry of health/other relevant ministries (for government expenditures), donors (for funding that is not channelled through the

8 www.who.int/nha/docs/English_PG.pdf

9 www.who.int/nha/methods/en/index.html

10 www.who.int/nha

11 http://go.worldbank.org/U0FSM7AQ40

12 Health System Metrics Technical meeting, September 28-29, 2006, Glion.

ministry of finance/ministry of health), insurance fund managers (for third-party funding) and household surveys (for out-of-pocket expenditures) using NHA methodology. Population numbers should ideally be de facto rather than de jure population, with the most complete cross country source being the United Nations Population Division.

Periodicity

Health expenditures should ideally be calculated on an annual basis. Full surveys of household expenditure are expensive and could be done less frequently, with extrapolations in the inter-survey years.

Cost

The cost of initially producing NHA varies considerably depending on the information and bureaucratic structure already available and the need for external technical assistance. Experience in some countries has shown that the costs to pull together existing information for the first NHA could be as low as US$ 50 000–75 000 with subsequent yearly costs largely related to producing recurrent statistics. This assumes that household expenditure surveys are already available and that international consultants do not do the bulk of the work. Initial costs include: a) training personnel; b) ensuring adequate computers and office infrastructure; c) logistics related to explanatory meetings and training on completing reporting forms or collecting information; and d) development of report templates relevant for national planning *(2)*.

Recommended core indicator 1b: General government expenditure on health as a proportion of general government expenditure (GGHE/GGE)

This indicator is related to how much funding is raised for health and reflects government commitment. African heads of state committed to ensuring that 15% of overall government expenditure goes to health in the Abuja Declaration of 2001 *(3)*. This can be taken as an aspirational goal, which even a few of the richer countries in the world have yet to achieve. While it is difficult to justify why 15% is the ideal cut point, many countries still devote less than 4% of GGE to health, suggesting low levels of government commitment.

Recommended core indicator 2: The ratio of household out-of-pocket payments for health to total expenditure on health

The ideal indicator of financial risk protection is the proportion of the population incurring catastrophic health expenditure due to out-of-pocket payments. A variation is the percentage that is impoverished as a result of out-of-pocket payments.

WHO has defined financial catastrophe for the past eight years as direct out-of-pocket payment exceeding 40% of household income net of subsistence needs. Subsistence needs are taken to be the median of household food expenditure in the country. Expenditures in excess of the 40% cut point generally require reallocation of household expenditures from basic needs, sometimes even from children's education *(4)*. The World Bank now has a simpler definition of financial catastrophe, i.e. occurring when out-of-pocket payment exceeds 10% of a household's total income. While this does not incorporate the progressivity allowed by the deduction of basic subsistence needs, it is probably simpler to estimate and similar to those derived by the WHO method.

To explore questions of equity, it may be possible in most cases to estimate the incidence of financial catastrophe by income quintile, or by wealth quintile if a separate wealth or asset index can be constructed from the same household survey. Indeed, in most developing countries, self-reported total expenditure is regarded as a more reliable indicator of command over resources than self-reported income, and thus these comparisons are usually made in terms of total expenditure quintiles *(5)*. Such comparisons however need to be interpreted carefully. In

many countries the quintile with the lowest income (or lowest level of total expenditure) has a lower incidence of catastrophic payments than richer quintiles. This reflects the perverse nature of user fees. When people are very poor, they do not use services for which they have to pay, and thus do not suffer a financial catastrophe. As they become slightly richer, they begin to use services, but then suffer the adverse financial consequences linked to paying for care.

Definition

The number of households in each region where direct out-of-pocket payments to providers for health during the past 12 months was more than 40% of their household income net of subsistence, or 10% of their total income.

- *Numerator*: Household out-of-pocket expenditure for health during the past 12 months.
- *Denominator*: Household income. As argued above, in most developing countries it is accepted that self-reported total expenditure on health is a more reliable indicator of household purchasing power than self-reported income, so this should be used as the denominator in those settings.

Data collection methodology

Household interview surveys.

Periodicity

The ratio is not likely to change dramatically over time unless substantial health financing reforms are done. In most countries, measurements done every five years would be adequate.

Cost

The cost for undertaking a national level household survey with a sample size sufficient for regional level disaggregation specifically for the purpose of collecting health expenditure data varies widely depending on the existing in-country capacity. The cost range may be from US$ 350 000 to US$ 1 000 000 depending on the level of technical support required. However, usually health expenditure data would be collected as part of a broader income and expenditure survey, or as an added module in a broader health survey. Accordingly, the additional costs are likely to be relatively small. The main new cost will be incurred by personnel who analyse the data and produce the information for policy makers.

Despite the logic of using the incidence of financial catastrophe as the core indicator, it is argued that a simpler indicator of financial risk protection is the ratio of out-of-pocket spending to total expenditure on health (OOP/THE) — or the inverse, the ratio of prepaid expenditures (taxes and insurance) to total expenditure on health. Undoubtedly, there is a high correlation between this indicator and the incidence of financial catastrophe (and impoverishment), and therefore is included as the core indicator here.

While the indicator may appear simpler, it requires exactly the same data from household expenditure surveys as the indicator on financial catastrophe described above. So if the surveys to estimate OOP/THE are available, they can also estimate the incidence of financial catastrophe. Experience has shown that policy makers can immediately perceive the political relevance of the incidence of financial catastrophe and/or impoverishment, whereas OOP/THE may not have the same immediate policy impact. For the purposes of discussion, at this stage OOP/THE is used as the recommended indicator in Table 5.1, with the incidence of financial catastrophe as an optional indicator. However, the ordering preference can easily be reversed.

Indicator to capture efficiency of the health financing system

At this stage, a core indicator to capture the efficiency of the health financing system is not being recommended because it is difficult to define a single indicator that is relatively simple to measure and easy to interpret. The proportion of total government health expenditure spent on salaries is included as one possible optional indicator, but needs to be interpreted very carefully. Certainly if this proportion is very high, health workers would not have sufficient drugs or other inputs to be able to do their jobs properly. However in some countries, where governments choose to contract out the provision of services to the private sector or NGOs rather than employ their own personnel, the proportion spent on salaries is low because payments to external contractors do not appear as salaries. Thus, this is not a very useful indicator of efficiency.

Certain optional indicators that could be measured depending on the capacity of the country are summarized in Table 5.1. Some of these reflect processes or outputs, while others are more related to outcomes.

5.4 Needs assessment for institutionalizing collection of data for monitoring finance indicators

Since total expenditure on health is currently being reported for 192 of the 193 WHO member countries, the primary need is to improve the quality of information that is already being collected, and to strengthen the institutionalization of the generation and utilization of this information. This requires regular and accurate reporting of government expenditures at all levels of the government, regular household expenditure surveys, and some method of routinely tracking expenditures by NGOs, faith-based organizations, philanthropies and the private sector.

WHO has identified four steps essential to the institutionalization process of NHA *(2)*. These are: (i) creating a demand on the part of policymakers for institutionalization; (ii) determining a location where NHA is housed; (iii) establishing standards for data collection and analysis; and (iv) instituting data reporting requirements.

The institutionalizing process of NHA also requires an assessment of existing infrastructure and systems and should include the following critical information.

- Government and stakeholder commitment to NHA as indicated by such steps as delegation of responsibility for generating NHA to a specified body and allocation of a budget for implementation.
- An assessment of existing human resources numbers and capacity, and infrastructure for generating NHA data.
- Clarity of health financing mechanisms related to funding sources, processes for channelling funds, and knowledge on where information on external health funding and third-party funding is available including if it is provided to any central or coordinating body. An assessment of the process currently used by WHO for NHA estimates for the country and identification of which data are weakest or least reliable should help obtain this information.
- Identification of problems with regards to transparency in national or donor health funding, and the need for policy changes or advocacy to improve this.
- Development of an audit function within the NHA to periodically assess the completeness and accuracy of the submitted or collected information, with a systematic strategy for feedback to the data sources to improve availability and quality of needed information.

5.5 Using financial indicators for health systems strengthening

In general, total expenditure on health should be increasing both in absolute terms and as a proportion of GDP in low-income countries, while the proportion of households facing financial catastrophe as a result of out-of-pocket payments should be decreasing. Financial indicators could be used to answer the questions listed below.

Is the total expenditure on health per capita, within the range defined internationally, enough to allow universal coverage of key health interventions (e.g. at least US$ 40 per capita)?

Is the percentage of the national budget for health reasonable given the national situation? Does it reflect a strong government commitment to health?

What proportion of total expenditure on health is dependent on external funding, and may not be sustainable in the long run? What steps can be taken domestically to raise additional funds for health?

Does a high total expenditure on health get reflected in health outcomes? If not, the efficiency and quality of service, and possibly transparency and corruption issues need to be reviewed.

2. What policies or implementation practices are needed to decrease catastrophic expenditures?

What does the assessment of out-of-pocket catastrophic expenditure show in terms of health finance mechanisms that contribute to, or hurt, equity in financing health? What other options are available to improve equity?

Are the existing health finance policies being implemented in a transparent manner (e.g. are the households receiving exemptions or subsidized services and medicines if they are eligible?).

Are there regional disparities that need to be addressed separately?

Table 5.1 Recommended indicators on health systems financing

Objectives and actions	Possible output indicators	Data sources	Associated outcome indicators
1. Raising sufficient funds for health. In low-income countries this must come from external and internal sources. Increasingly reliable external funds are needed in most countries, but more can be done to raise funds, or raise them more efficiently, domestically.	1. Data on total health expenditures routinely collected and reported.	1. National Health Accounts (NHA)	**Core indicator 1a.** Total expenditure on health (THE) **Core indicator 1b.** General government health expenditure as a proportion of general government expenditure (GGHE/GGE) **Optional Indicator 1:** THE as % GDP
2. Improving financial risk protection and coverage for vulnerable groups. In most countries this requires moving away from direct out-of-pocket payments and towards a form of prepayment with risk pooling that is tax- or insurance-based.	2a. Patient / household out-of-pocket expenditures of accessing or obtaining services collected intermittently. 2b. In countries with widespread health insurance: Number (%) of people/households covered by health insurance, by population group and specifically for poor/vulnerable groups.	2a. Household expenditure and utilization surveys. 2b. Health insurance enrolment records.	**Core indicator 2.** The ratio of household out-of-pocket payments for health to total expenditure on health **Optional indicator 2:** % of households impoverished annually by out-of-pocket payments, by expenditure quintile
3. Improving efficiency of resource utilization.	3a. Information on government expenditures on wages and salaries readily available. 3b. Availability of data on government expenditure on priority problems, by level of government.	3. Government expenditure accounts.	**Optional indicator 3:** Government expenditure on wages and salaries as % GGHE
4. Improving financial transparency and management at operational levels.	4. Number and % of facilities meeting established national financial management criteria.	Audit office.	

Selected tools

National Health Accounts (NHA). Geneva, World Health Organization (http://www.who.int/nha, accessed February 10, 2010).

> Health financing policy requires decisions on how to raise funds, how to pool them, and how to use them equitably and efficiently. Informed decision-making requires reliable information on the quantity of financial resources used for health, their sources and the way they are used. National Health Accounts provides evidence to monitor trends in health spending for all – public and private sectors, different health-care activities, providers, diseases, population groups and regions in a country. It helps in developing national strategies for effective health financing and in raising additional funds for health. The information can be used to make financial projections of a country's health system requirements and compare its experiences with those in the past or with those of other countries.

Gu*ide to producing national health accounts – with special applications for low-income and middle-income countries.* Geneva, World Health Organization, World Bank, USAID, 2005 (http://www.who.int/nha/docs/English_PG.pdf, accessed March 29, 2010).

> This Guide walks the reader through the process of acquiring and evaluating data for National Health Accounts, and provides step-by-step examples on translating numbers into information useful for policy analysis and development.

OASIS (forthcoming) (http://www.who.int/health_financing/tools)

> The Organizational Assessment for Improving & Strengthening Health Financing can be used to: (i) analyse the performance of a health financing system by assessing key design issues and implementation, (ii) identify bottlenecks in the functioning of institutions and organizations and (iii) help in finding institutional and organizational alternatives.

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Related links

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6. Leadership and governance

6.

Leadership and governance

6.1 Introduction

Governance in health is being increasingly regarded as a salient theme on the development agenda. Leadership and governance in building a health system involve ensuring that strategic policy frameworks exist and are combined with effective oversight, coalition-building, regulation, attention to system design and accountability. The need for greater accountability arises both from increased funding and a growing demand to demonstrate results. Accountability is therefore an intrinsic aspect of governance that concerns the management of relationships between various stakeholders in health, including individuals, households, communities, firms, governments, nongovernmental organizations, private firms and other entities that have the responsibility to finance, monitor, deliver and use health services *(1)*. Accountability involves, in particular:

- delegation or an understanding (either implicit or explicit) of how services are supplied;
- financing to ensure that adequate resources are available to deliver essential services;
- performance around the actual supply of services;
- receipt of relevant information to evaluate or monitor performance;
- enforcement, such as imposition of sanctions or the provision of rewards for performance.

Governance in health is a cross-cutting theme, intimately connected with issues surrounding accountability. In the context of health systems strengthening, it is an integral part of the health system components discussed in earlier sections of this handbook. Despite consensus on the importance of leadership and governance in improving health outcomes, they remain inadequately monitored and evaluated.

6.2 Indicators for measuring health system governance

Two types of indicators have been proposed for measuring governance: rules-based and outcome-based (*2*).

Rules-based indicators measure whether countries have appropriate policies, strategies and codified approaches for health system governance. In the health systems context, these indicators include the existence, for example, of a national essential medicines list or a national policy on malaria control. They are part of a larger class of indicators called governance determinants (*3*). In addition to the existence of rules (called "formal procedures"), the determinants of health-care-provision governance include four other broad categories: ownership arrangements, decentralization, stakeholder participation, and contextual factors. In this framework, determinants of governance are contrasted with governance performance.

Outcome-based indicators measure whether rules and procedures are being effectively implemented or enforced, based on the experience of relevant stakeholders. For health systems, examples may include the availability of essential medicines in health facilities or the absenteeism of health workers. Since the outcome-based indicators relate directly to the functioning of other health system "building blocks", only the rules-based indicators for measuring health system governance are discussed in this section.

When selecting indicators for measuring governance in health, a high value should be placed on their usefulness and relevance. Nevertheless, even the most suitable governance indicators may be unable to adequately predict whether developments in a country or sector can be attributed to a change in governance. Thus, in general, governance indicators should not be used in isolation when designing policy responses to health system performance issues *(4)*.

6.3 Sources of information on health system governance

Measurement of rules-based health system governance indicators will, in most cases, rely on both expert analysis of available sources such as administrative records (including legal/regulatory documents) coupled with expert reviews of national health policies. Administrative records are the important main data sources for rules-based indicators of governance and include legal and regulatory documents, national health strategies, budget documents, and regulations and guidelines that relate to the management, organization and financing of the health sector. Administrative records can be obtained from government publications, legal and administrative document departments and official web sites.

The outcome-based governance indicators, which are discussed in other sections of this handbook, are generated using various data sources, including facility surveys, public expenditure reviews or client assessments.

6.4 Core indicators

A composite governance policy index, comprising 10 rules-based indicators that cover health policies for different disease interventions[1] and health system aspects, is presented. The index provides a summary measure of governance quality from a rules-based perspective. The indicators assess whether countries have policies, regulations and strategies in place to promote good leadership and governance in the health sector, but do not aim to assess enforcement.

Each indicator is given a score of 0 if an adequate policy does not exist or cannot be assessed; and 1 if an adequate policy is available. The maximum score for the policy index is therefore 10.

Each indicator is described below and summarized in Table 6.1.

Recommended core indicator 1a: Existence of an up-to-date national health strategy linked to national needs and priorities

Formulating national policies and strategies is a basic function of governments, and the task of formulating and implementing a health policy falls within the remit of the health ministry. An explicit health strategy defines the vision for the future, and outlines how objectives will be achieved. National health policies should outline priorities and the expected roles of different actors, inform and build consensus, and estimate the resources required to achieve goals and priorities. A recommended core indicator, therefore, is the existence of effective national health strategies and policies that reflect national needs and priorities, as opposed to factional political or financial interests, to foster broad-based political support and ownership of policies.

1 Focusing particularly on diseases that are common in low-income and middle-income countries.

Recommended core indicator 1b: Existence and year of last update of a published national medicines policy

A NMP defines a framework for setting and monitoring medium- to long-term objectives in the public and private pharmaceutical sectors. It should encompass three objectives: (i) ensuring equitable availability and affordability of essential medicines; (ii) ensuring that all medicines are safe, efficacious and of high quality; and (iii) promoting rational use of medicines by health-care professionals and consumers. By attaining these objectives, countries can reduce morbidity and mortality, decrease the incidence of catastrophic illness that can increase impoverishment, and prevent large-scale losses to health and economic systems *(5)*.Further elaboration of this indicator can be found in Section 4 of this handbook.

Recommended core indicator 1c: Existence of policies on medicines procurement that specify the most cost-effective medicines in the right quantities; open, competitive bidding of suppliers for quality products

Expenditures on pharmaceuticals are highly susceptible to various forms of corruption. The pharmaceutical sector, with a global market value of over US$ 600 billion, is particularly vulnerable in the area of procurement. Procurement involves inventory management, aggregate purchasing, public bidding contests, technical analysis of offers, proper allocation of resources, payments, receipts of drugs purchased and quality control checks. These processes are often poorly documented and are thus a vulnerable target for corruption and fraud. Therefore to mitigate this threat, and to promote good governance, open bidding processes, good technical specifications and consistent and transparent procedures are essential.

Recommended core indicator 1d: Tuberculosis—existence of a national strategic plan for tuberculosis that reflects the six principal components of the Stop-TB strategy as outlined in the Global Plan to Stop TB 2006–2015

Tuberculosis (TB) remains one of the world's leading killers. In response to this global public health concern, WHO launched the Stop-TB strategy to assist countries in scaling up control activities, while also addressing the spread of TB-HIV co-infection and multidrug-resistant TB (MDR-TB).This indicator is therefore motivated by global TB control efforts to ensure that national TB plans are aligned with the six principal components of the Stop-TB strategy:

Pursue high-quality DOTS expansion and enhancement (DOTS, or directly observed treatment, short-course, combines political commitment, microscopy services, drug supplies, surveillance and monitoring systems, and use of highly efficacious regimes with direct observation of treatment for TB).

Address TB-HIV and MDR-TB and the needs of poor and vulnerable populations.

Contribute to health system strengthening based on primary health care.

Engage all care providers.

Empower people with TB, and communities through partnership.

Enable and promote research.

Recommended core indicator 1e: Malaria—existence of a national malaria strategy or policy that includes drug efficacy monitoring, vector control and insecticide resistance monitoring

WHO formulates global malaria policies and strategies. Vector control, i.e. the reduction of malaria morbidity and mortality through a reduction in the levels of mosquitoes, is generally the most effective intervention to prevent malaria transmission and therefore serves as one of the basic technical elements of the Global Malaria Control Strategy. Malaria control requires an integrated approach, involving prevention, treatment

with effective antimalarials, and monitoring and control at all levels. This indicator therefore monitors whether national malaria control programmes are aligned with the major priorities outlined by WHO, including drug efficacy monitoring, vector control and insecticide resistance monitoring.

Recommended core indicator 1f: HIV/AIDS—completion of the UNGASS National Composite Policy Index questionnaire for HIV/AIDS

At the close of the United Nations General Assembly Special Session (UNGASS) on HIV/AIDS in June 2001, 189 Member States adopted the Declaration of Commitment on HIV/AIDS. This reflects the global consensus on a comprehensive framework to mitigate and control the spread of the HIV epidemic by 2015. An integral part of the core UNGASS indicators is the National Composite Policy Index, which reflects consensus among stakeholders on effective mechanisms for HIV/AIDS control. This index is designed to assess progress towards the development and implementation of national AIDS policies and strategies. It serves to track whether national policies and HIV/AIDS programmes are comprehensive and in line with the global priorities set forth by the UNGASS Declaration. In its annual country survey, the National Composite Policy Index includes questions on whether countries have developed a national multisectoral strategy or action framework to combat HIV/AIDS and comprises, formal programme goals, clear targets and/or milestones, detailed budget of costs per programmatic area, indications of funding sources, and a monitoring and evaluation framework (*6*).

Recommended core indicator 1g: Maternal health—existence of a comprehensive reproductive health policy consistent with the ICPD action plan

The 1994 International Conference on Population and Development (ICPD) articulated a vision of the relationships between population, development and individual well-being. At the Conference, 179 governments adopted a 20-year plan of action, including reproductive health and rights, as well as women's empowerment and gender equality as the cornerstone of population and development programmes. This indicator monitors whether reproductive health policies are both comprehensive and consistent with the ICPD plan of action.

Recommended core indicator 1h: Child health—existence of an updated comprehensive, multiyear plan for childhood immunization

Immunization programmes are often based on past achievements and trends, with separate initiatives for each targeted disease, and too often seek to respond to specific global goals rather than to country needs and priorities. A comprehensive, multiyear plan for childhood immunization would face up to these challenges by proposing strategies that are all-inclusive and integrated with other health interventions. A comprehensive multiyear plan would evaluate the costs and financing options to ensure the financial sustainability of the programme and create linkages to broader health sector planning and budgeting processes. Such efforts would help to strengthen the capacity of countries to deliver immunization and child health services.

Recommended core indicator 1i: Existence of key health sector documents that are disseminated regularly (such as budget documents, annual performance reviews and health indicators)

The publication and dissemination of key health sector documents and reports, including annual budgets and performance reviews, promote accountability and transparency in the health sector. Such documentation helps to create an informed public and serves to improve government accountability to the population. A core indicator relating to the annual publication and dissemination of such materials seeks to create an environment that is responsive to public needs and concerns.

Recommended core indicator 1j: Existence of mechanisms, such as surveys, for obtaining opportune client input on appropriate, timely and effective access to health services

Surveys of patient satisfaction and utilization of health services are useful tools for obtaining information on the quality and responsiveness of health services. Such surveys may measure inputs (including whether facilities are properly equipped with essential medicines), processes (including whether waiting times are reasonable and treatment protocols are followed) and outcomes (including whether medical interventions reduce morbidity and mortality). Hence, an indicator that measures whether consumer satisfaction is taken into account in the assessment of health services reflects the responsiveness of health systems.

Table 6.1 Summary of proposed indicators for health systems governance

Indicators	Data collection method	Scoring
Policy index		Sum of the scores of 10 indicators. Max. score: 10
1a. Existence of an up-to-date national health strategy linked to national needs and priorities 1b. Existence and year of last update of a published national medicines policy 1c. Existence of policies on medicines procurement that specify the most cost-effective medicines in the right quantities; open, competitive bidding of suppliers of quality products 1d. Tuberculosis—existence of a national strategic plan for tuberculosis that reflects the six principal components of the Stop-TB strategy as outlined in the Global Plan to Stop TB 2006–2015 1e. Malaria—existence of a national malaria strategy or policy that includes drug efficacy monitoring, vector control and insecticide resistance monitoring 1f. HIV/AIDS—completion of the UNGASS National Composite Policy Index questionnaire for HIV/AIDS 1g. Maternal health—existence of a comprehensive reproductive health policy consistent with the ICPD action plan 1h. Child health—existence of an updated comprehensive, multiyear plan for childhood immunization 1i. Existence of key health sector documents that are disseminated regularly (such as budget documents, annual performance reviews and health indicators) 1j. Existence of mechanisms, such as surveys, for obtaining opportune client input on appropriate, timely and effective access to health services	Review of national health policies in respective domains (such as essential medicines and pharmaceutical, TB, malaria, HIV/AIDS, maternal health, child health/immunization).	If adequate policy does not exist or cannot be assessed: 0 If adequate policy is available: 1

Selected tools and resources

Citizen report card surveys: Washington DC, World Bank (http://siteresources.worldbank.org INTPCENG/1143380-1116506267488/20511066/reportcardnote.pdf, accessed 27 April 2010)

> These surveys are a mechanism to promote civil engagement and demand-side accountability, and empower individuals to express their views to government bodies. The surveys allow citizens to contribute to oversight and regulation and therefore aim to improve the quality and integrity of public services.

Good governance for medicines: assessment instrument. Geneva, World Health Organization, 2006 (http://www.who.int/medicines/areas/policy/goodgovernance/GGM_assessment.pdf, accessed 11 April 2010).

> The WHO has initiated the Good Governance for Medicines (GGM) programme in an attempt to curb corruption in pharmaceutical sector systems by increasing transparency and accountability and promoting ethical practices. The GGM programme offers a three-step technical support package, namely national transparency assessment, development of national GGM programme, and implementation, to obtain a picture of the level of transparency and potential vulnerability to corruption in the public pharmaceutical sector using WHO's assessment instrument. The assessment looks at six functions: registration of medicines, control of medicines promotion, inspection of establishments, selection of essential medicines, procurement and distribution. Licensing of establishments and control of clinical trials will be added soon.

Measuring transparency in medicines registration, selection and procurement: four country assessment studies. Geneva, World Health Organization, AusAid, 2006 (http://www.who.int/medicines/areas/policy/goodgovernance/WHO_PSM_PAR_2006.7.pdf, accessed 11 April 2010).

> Procurement (which involves inventory management, aggregate purchasing, public bidding contests, technical analysis of offers, proper allocation of resources, payments, receipts of drugs purchased and quality control checks), in particular, is vulnerable to corruption and fraud. In addition, the issue of counterfeit drugs has become salient as drugs are too often deliberately and fraudulently mislabelled with respect to their identity or source. Counterfeiting occurs both with branded and generic products, and counterfeit medicines may include products with the correct ingredients but fake packaging, with the wrong ingredients, without active ingredients, or with insufficient active ingredients.

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