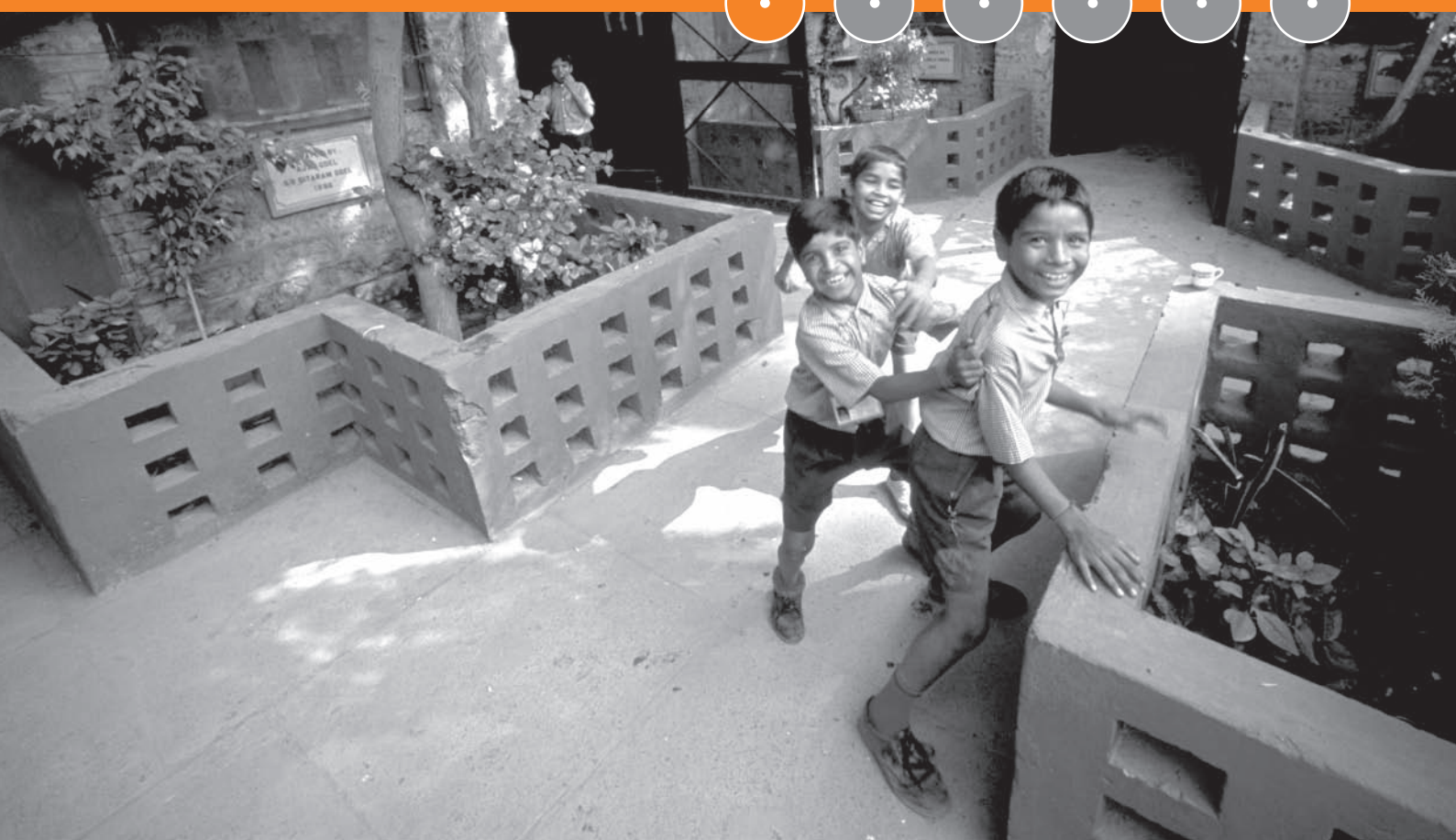
1. Health service delivery



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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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