

Toolkit on monitoring health systems strengthening

SERVICE DELIVERY

DRAFT



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Table of contents

1. Introduction	2
2. Sources of information	3
Facility reporting systems	3
District key informant survey	3
Facility census.....	4
Facility surveys	4
A monitoring system	6
3. Indicators	6
Service availability.....	7
Service capacity: general	9
Service capacity: specific.....	10
Service utilization	13
Service quality	13
4. Investments to improve data availability and quality	15
District focus with regional support	16
Data collection and compilation	16
Costs.....	16
Annex: tools and further reading.....	17

1. Introduction

Strengthening service delivery is a key strategy to achieve the Millennium Development Goals. This includes the delivery of interventions to reduce child mortality, maternal mortality, and the burden to HIV/AIDS, tuberculosis and malaria¹. Service provision or delivery is an immediate output of the inputs into the health system, such as health workforce, procurement and supplies and finances. Increased inputs should lead to improved service delivery and enhanced access to services. Ensuring availability and access to health services is one of the main functions of a health system. Such services should meet a minimum quality standard.

Different terms such as access, utilization, availability and coverage are often used interchangeably to reflect on whether people are receiving the services they need². Access is a broad term with different dimensions. Comprehensive measurement of access requires a systematic assessment of physical, financial and socio-psychological access to services.

- *Availability* refers to the physical access or reachability of services that meet a minimum standard. The latter often requires specification in terms of the elements of service delivery such as basic equipment, drugs and commodities, health workforce (presence and training), and guidelines for treatment. This can only be obtained by facility visits, using standardized data collection instruments. Data on the population distribution are required to estimate physical access. More precise estimates of physical access use travel time (and costs) rather than distance, but are difficult to measure.
- *Affordability* refers to the ability of the client to pay for the services. Data can be collected by facility visits or by household interviews. The latter is likely to be a more accurate reflection of what the consumer paid. The extent to which the service is affordable depends on the clients' ability to pay which complicates measurement.
- *Acceptability* of the service predominantly has a socio-psychological dimension which can best be measured through household surveys. Client exit interviews are a biased sample as those who stay away from the facility because of socio-cultural barriers will be missed. These dimensions of access are a pre-condition for quality.

This section focuses on monitoring service delivery, notably physical access to services. Such data need to be complemented by other dimensions of access and technical quality (safety, efficiency, and effectiveness of selected interventions). Monitoring service delivery is not about the coverage of interventions, which is defined as the proportion of people who receive a specific intervention or service among those who need it. Coverage depends on service delivery and the utilization of the service by the target population.

Monitoring service delivery has immediate relevance for the management of health services, which distinguishes this area from other health systems building blocks. Shortages of drugs, uneven distribution of health services, poor availability of equipment or guidelines must all be addressed as part of basic service management.

¹ Bellagio Study group on child survival. Translating knowledge into action for child survival. Lancet 2003, 362: 323-7. References for MMR, HTM.

² Tanahashi T. Health services coverage and its evaluation. *Bulletin of the World Health Organization*, 1978, 56:295–303. Shenghelia B et al. Beyond access and utilization: Defining and measuring health system coverage in *Health Systems Performance Assessment: Debates Methods and Empiricism*. Edited by CJL Murray and DB Evans. Geneva, World Health Organization, 2003: 221-235

2. Sources of information

There are multiple data sources on the state of service delivery, including facility reporting systems, surveys, censuses and special studies. No single method will provide all of the information required to assess service delivery and multiple methods are required to obtain a full picture. Table 1 provides a summary of the strengths and limitations of the different methods.

Facility reporting systems

Service data are generated at the facility level and include key outputs from the regular (mostly monthly) reporting systems include services and care offered and treatments administered. The problems associated with developing service coverage estimates from facility data are primarily related to completeness and accuracy of recording and reporting.

Facility reporting systems, often referred to as Health Management Information Systems (HMIS), are used to monitor service delivery. This may include supervisory or clinic-reported data on drug stock outs in a defined reference period (e.g. in the last month), functioning of outreach services, and health worker availability. If present, the data are generally limited to the public sector, sometimes with not-for-profit facilities included. The same recording and reporting problems that affect other kinds of health facility data also pertain to such data. In general, facility reporting systems give only limited information on the status of service delivery.

Hospital records are the basis for statistics about performance related to in-patient activities, including numbers of beds, admissions, discharges, deaths and duration of stay. Outpatient records are the basis for utilization data.

District key informant survey

In many countries, the decentralization of health systems has focused on districts or equivalent administrative structures. Different terms are used to name such structures in various countries, here the term district is used to refer to these health administrative structures. A district, with population varying from 100 000 to 750 000 in sub-Saharan Africa to 5 million in India, often has a health management team in charge that plans and coordinates the district health activities. The equivalent in Latin America is a municipio. District teams ideally have accurate up-to-date management information on the availability of specific services, which may include the private sector.

WHO has developed a tool for a rapid survey of all districts including a questionnaire, data entry tool on a personal digital assistant (PDA) and GIS software (HealthMapper), called district Service Availability Mapping (SAM). In all districts the health management teams are interviewed to obtain data on the availability of health services and other health resources. Pre-existing list of health facilities are used when available and updated during fieldwork. Urban areas form a particular challenge and experience has shown that it is generally necessary to try to identify all facilities and visit those to obtain an accurate picture of service availability. The most important outputs of the district SAM are: district and regional/provincial distribution of health care services (facilities, beds, health workers), assessment of district penetration of specific intervention programmes, such as insecticide-treated bednet or condom social marketing programmes, specific lab facilities or IMCI training programmes, mapping of less common services, such as ARV therapy or Caesarean section.

The low-cost key informant based district SAM however has several drawbacks. Data quality may be poor if the district team is not well-informed. If the private sector is large, the knowledge of the

government health team is likely to be inadequate unless there is a well-functioning facility registration system.

Facility census

A facility census aims to include visits to all public and private health facilities in a country (or subnationally in a district, region or province). Such a census should form the basis for a national and subnational monitoring system of service delivery which can be supplemented by quality ascertainment through facility surveys and in-depth assessments. As a minimum a facility census includes information on the health infrastructure (public and private, facility type with GPS coordinates), availability and condition of physical infrastructure and communication capacity, health workforce, general status of service delivery (drug supply, equipment and commodities). In addition, a brief assessment of the availability of key services (HIV, TB, malaria, immunization, IMCI, etc.) can be done at relative little extra cost focusing on the basic elements of care: whether the service is offered, the availability of trained health workers, the presence of guidelines, key drugs and equipment and diagnostic facilities.

A facility census only touches upon the basic elements of service quality. In general, no data are collected on patient satisfaction, and knowledge and practices of health workers, as this would be too time-consuming and costly.

The key output of a facility census is a national database of health facilities, equipment and key services. It is also an independent source of numbers of health workers which needs to be compared and analysed in conjunction with other sources of information. Additional information on, for instance, the presence of workers on the day of visit can be included. Comparisons between districts and regions provide valuable information about the distribution of services within the country. Information on minimum standards can be used for key services in order to provide information to program planners.

The identification of all facilities is a major challenge. Smaller private facilities are more likely to be missed and special efforts will have to be made to include those, 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 facilities. Obtaining access to private facilities for the brief interview can pose another challenge.

Facility surveys

During the eighties surveys of facilities were a key element of primary health care reviews which took a system view from the central office of the Ministry of Health to the community. Such reviews became less common during the nineties. More recently, an increasing number of countries are conducting facility surveys.

USAID and MACRO have developed a comprehensive facility survey instrument, called Service Provision Assessment (SPA). SPA is conducted in a nationally representative sample of health facilities (often exceeding 400 facilities, stratified by type of facility) to provide information about the characteristics of health services including their quality, infrastructure, utilization, and availability. The SPA covers all types of health services sites from hospitals to health posts, including public and private institutions. Data collection includes facility resources audit, provider interview, client-provider observation and client exit interview. Another example of a comprehensive facility assessment is the balanced score card in Afghanistan to monitor the scale-up of health services (see Box).

Balanced score card, Afghanistan

A balanced score card was developed in Afghanistan to monitor the scale-up of health services (Peters et al., 2007, 2008). The assessment relies on a facility survey, including health worker interview, client provider observation and exit interview to assess 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 current), capacity for service provision (e.g. equipment functionality, drug availability, training intensity, and infrastructure), service provision (e.g. proper sharps disposal, OPD visits per month), financial systems (e.g. user fee guidelines and exemptions for poor patients) and overall vision e.g. OPD visit concentration index³.

A facility survey generally focuses on key services including child health, maternal health, family planning, STI services, TB services and an extensive HIV module covering prevention, care, and support. The indicators include facility infrastructure (water, electricity, latrines, infection control), equipment and supplies (exam tables, lab tests, pharmaceutical commodities, sterilization and disinfection), support systems (training, supervision, quality assurance, equipment maintenance, guidelines, visual aids), management systems (adequate information system for clients, logistics systems, equipment maintenance), providers' adherence to standards (patient history, risk assessment, health education, relevant examinations, infection control procedures).

The facility survey also measures the quality of specific services and whether all required elements are present to provide routine care, for example, immunization and diarrhea treatments for child health services. The core questionnaire reflects generally accepted standards for health care services, including UNICEF immunization guidelines and standards set by the Safe Motherhood Initiative, with local adaptations as necessary.

The objective of the facility survey is not to provide information on strengths and weaknesses for specific facilities. Rather, it is to identify 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.

One of the disadvantages of the facility survey is its costs to obtain information of which the relevance is limited to the national level. The extensive data collection efforts in each facility provides a wealth of information on hundreds of indicators but a much smaller number of indicators matter for policy-making. 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 rather than a population-based sample.

³ Peters DH, Noor AA, Singh LP, Kakar FK, Hansen PM, Burnham G. A balanced scorecard for health services in Afghanistan. Bull WHO 2007, 85: 146-151. Hansen PM, Peters DH, Niayesh H, Singh LP, Dwivedi V, Burnham G. Measuring and managing progress in the establishment of basic health services: the Afghanistan health sector balanced scorecard. Submitted for publication.

Table 1
Summary table of different main data collection methods on service provision.

Data collection method	Description	Strengths	Limitations
Facility reports	Regular facility data reported to regional and national levels by service providers.	Mandated practice at the facility level with standard reporting formats and cycle.	Limited data on service provision; often incomplete with time delays in reporting, public sector only
District key informant survey	Periodic survey of all districts or equivalent administrative unit within a country. Interviews with district medical teams.	Relatively quick and inexpensive. Provides a quick overview of what is available within districts, including health care facilities, services and service providers.	Relies on key informant knowledge. Often incomplete for private facilities. Discrepancies may exist between what is reported and what is available from national databases.
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 centers where smaller private practices may be more common. Access to all facilities may be problematic.
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

A monitoring system

No single data source provides sufficient information to monitor service delivery. A service delivery monitoring system relies on multiple sources of data, which overlap with those that are needed for human resources and procurement, and supplies information. First, basic data on service delivery are reported by health facility as part of the regular HMIS. Second, a national database of all facilities with basic information and district focus is maintained and after an initial census of facilities, updated every three years. Third, annual surveys of a sample of health facilities are conducted to assess the availability and quality of services. The topics included in the facility surveys may change, using a standardized set of modules, and selecting topics based on expected rate of change and relevance.

3. Indicators

The main data sources can provide information on a wide range of indicators related to availability and access, quality, safety, efficiency and equity of services. Countries have often defined their own set of performance measures in this area. Health systems performance assessment becomes more valuable if health system outputs are compared between countries. Such comparisons can be done by individual countries or by international organizations such as OECD and WHO.

Facility assessments, through surveys and censuses, are used to monitor a wide range of aspects of service delivery, focusing on the availability and basic elements of quality of services. The potential indicators can be grouped into infrastructure, infection control, services offered according to a minimum standard, laboratory services, drugs and commodities, basic equipment and supplies.⁴ The challenge is to come up with a parsimonious set of sensitive and specific indicators that can easily be collected in all facility assessments and in some cases become part of regular facility reporting systems.

There is a need for summary measures or indexes to monitor service provision. In some cases a single tracer condition may suffice, but a general picture will also be essential. Facility density, notably outpatient facilities, is useful as a basis for interpretation of the majority of proposed indexes. It however does not distinguish between hospitals and smaller facilities. Hospital beds are the most feasible indicator of the availability of in-patient services. The subsequent indexes aim to measure infrastructure of the facility, the ability to implement infection control practices, the laboratory capacity, the availability of basic equipment in working condition, and the presence of selected essential drugs and commodities on the day of the interview.

This section lists a small set of service delivery indicators focused on low and lower middle income countries. The purpose of this set is to monitor the strength of the health system over time. The indicators cannot be seen in isolation from the broader set of information that is generated by the different data collection efforts.

Service availability

Number and distribution of health facilities per 10 000 population

Numerator

The number of health facilities. This means all public and private health facilities, defined as a static facility (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 methods

District and national databases provide the number of public facilities, often by type (hospital, health centre, health post, dispensary etc.). Special efforts – notably facility censuses – are often required to obtain the number of private facilities, especially if no registration system is enforced.

Comparability issues

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

Periodicity

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

⁴ The full list of potential items that can be included is given on page 9

Complementary dimension

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

Additional information can be presented about the type of health facility using the following categories: public, private-not-for-profit (including faith based), private for profit, and other (such as parastatals).

Number and distribution of in-patient beds per 10 000 population

Numerator

The number of in-patients beds. This include total hospital beds –long term and acute care beds–, and include maternity beds but not delivery beds. Pediatric beds are included as well. Public and private sector are included. *Denominator:* the total population for the same geographical area

Data collection methods

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 analyzed the population not necessarily uses the facilities in the designated area. Comparisons of densities between districts have to be done 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 in some instances districts.

Complementary dimensions

Additional information can be presented about beds by type of hospital facility using the following categories: public, private-not-for-profit (including faith based), private for profit, and other (such as parastatals).

The two indicators of service availability only provide partial information on physical access to services: the proportion of the population that lives within a certain travel time and distance from a health facility. Most data on access to health services appear to have been derived from judgment or basic spatial analysis. Designing catchment areas around health facilities (e.g. 5 or 10 km buffer), without taking the capacity of each health facility into account and without considering logistical constraints for patients, provides a rough idea of physical access. Such an analysis requires the GPS coordinates of all service delivery points and the population data for very small geographic areas. Only a limited number of countries are conducting such analyses on a regular basis. Urban areas form a special challenge for monitoring purposes. Physical access may be less of an issue, but affordability becomes the most important obstacle to access.

Service capacity: general

Proportion of health facilities that meet basic service capacity standards

The basic service capacity or readiness is based on the presence of a core set of items present and functioning in the facility on the day of the assessment. The basic capacity is summarized in five components which should all be presented separately. Ideally, information is available on the physical access to health services, such as proportion of the population in the country or in a district that lives within 5 or 10 km of a health facility that has the basic service capacity (or a specific service). Such information depends on the availability of detailed data on the distribution of the population. Further refinement can be obtained if actual travel time can be estimated either from geographic information systems or through interviews in household or community surveys.

1. Basic amenities
 - a. Regular water supply from safe source on-site (or within 500m)
 - b. Sanitary facilities: client latrine
 - c. Waiting area protected from sun and rain
 - d. Communication equipment (landline or mobile phone or short wave radio)
 - e. Electricity: routinely available during service hours or a backup generator with fuel
2. Basic equipment
 - a. Adult weighing scale
 - b. Child weighing scale
 - c. Thermometer
 - d. Stethoscope
 - e. BP cuff
 - f. Refrigerator
 - g. Needles and syringes
3. Infection control
 - a. Functioning sterilization equipment with power source for method: autoclave, dry heat sterilization, boiling and steaming, chemical disinfection (chlorine base or glutaraldehyde solution),
4. Human resources
 - a. Minimum staffing requirement according to national guidelines (qualified staff);
 - b. Proportion of health workers present on the day of assessment
5. Tracer drugs and diagnostics
 - a. Availability tracer drugs: the proportion of the tracer medicines that are present and non-expired on the day of the assessment (see procurement and supplies)
 - b. Capacity to obtain basic laboratory results within one day: Hb; HIV test, syphilis test and malaria blood test if appropriate.

Numerator

The number of facilities with basic service capacity standards. *Denominator*: the total number of facilities

Data collection methods

Facility visits are required using a standardized questionnaire to assess the availability and functioning of the components required to meet the basic service capacity standards.

Comparability issues

Definitions and data collection should be standardized

Periodicity

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

Complementary dimensions

Data will need to be presented for the different components of basic service capacity, especially infection control.

Hospitals provide a wider range of services and will need an expanded version of the questionnaire administered during facility assessment, or regular reporting.

Service capacity: specific

Proportion of health facilities that meet basic service capacity standards

Number and distribution of health facilities with basic service capacity per 10,000 population

This index pertains to functioning facilities/service sites that meet national standards for providing key services applicable to their type of facility/service site. This may include malaria control, Integrated Management of Childhood Illnesses, safe motherhood, family planning, HIV/AIDS, control of sexually transmitted diseases, TB control, and control of non-communicable diseases (NCD). For each programme a small set of key components can be assessed. These include the availability of basic equipment, diagnostic facilities, trained staff, guidelines, and treatment (mostly drugs). The main challenge is to come up with a concise set of items for each index so that all programmes can be monitored through a single data collection mechanism.

Numerator

The number of facilities that have the basic service capacity to provide a specific service. *Denominator:* the total number of facilities for the proportion or the total population for the same geographical area to compute the density, e.g. number of facilities that provide basic delivery care

Data collection methods

Facility visits are required using a standardized questionnaire to assess the availability and functioning of the components required to meet the basic service capacity standards

Comparability issues

Definitions and data collection should be standardized When using indexes the results for the specific components should be specified

Periodicity

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

Complementary dimensions

Data will need to be presented for the different components of basic service capacity, especially infection control

Distribution implies urban rural differences and could also include differences between regions or provinces, or in some instances districts.

The facility census can also be used to monitor the service provision component of specific health programmes.

Table 3
Markers to monitor basic capacity to deliver specific services

Intervention area	Services offered	Staff & training	Equipment	Diagnostic (on site or next day result)	Treatment /prevention
Child health (IMCI)	Curative care Immunization Growth monitoring	Guidelines IMCI At least 1 staff IMCI trained in last 2 years	Refrigerator Child weighing scale Thermometer Stethoscope	Hb Parasite in stool	ORS packet Amoxicillin Cotrimoxazol Paracetamol Vitamin A Iron tablets Me-/albendazole
Child immunization services	Vaccination of children	Guidelines (EPI / cold chain)	Health cards Tally sheets & register Syringes and needles Cold box with ice packs Soap, water, sharps box		Vaccines in stock measles DPT-HB polio BCG
Malaria control	Malaria diagnosis and treatment	Guidelines for malaria treatment	Rapid tests or slides and cover slips with microscope	Blood slide (on-site) or rapid test	First and second line anti-malarials ACT
Safe mother hood	Delivery care basic	Guidelines Trained service provider (midwife)	Emergency transportation Gloves Delivery bed Partograph Examination light Scissors, blade, cord clamp, suction app. Needles and syringes IV solution with infusion set Suture material and needle holder		Antibiotic eye ointment for newborn, Skin disinfectant Injectable oxytocic/ergometrine Oral antibiotic Anticonvulsant Magnesium sulphate or vallium (injectable) Injectable antibiotic
	Delivery care – Comprehensive emergency obstetric care	Guidelines Trained service provider	Vacuum extract or PAC – Vacuum aspirator D&C kit Blood transfusion, Caesarian Section Respiratory support unit (infant sized ambu bag)		As above with Anticonvulsant Magnesium sulphate or vallium (injectable) Injectable antibiotic

Intervention area	Services offered	Staff & training	Equipment	Diagnostic (on site or next day result)	Treatment /prevention
			external heat source (incubator, heat lamp)		
Family planning	Offering any modern method of family planning	Guidelines Any staff trained in last 2 years (pre- or in-service)	Individual client cards Privacy (visual) Privacy (auditory) BP machine Stethoscope		Oral contraceptives: combined, progestin-only Injectables: Progesterone-only Condoms (male) Emergency pill
HIV/AIDS treatment and care	HIV testing	Guidelines Trained staff (in last 2 years)	Records/register of providing test results	HIV test	
	Care and support services (OI treatment, palliative care)	Guidelines clinical management HIV/AIDS	IV fluids with infusion set		IV treatment fungal infections Co-trimoxazole TB drugs Pain management drugs
	ART	Guidelines ARV therapy	Register (pre-ART and treatment)	CD4 / VL / TLC here or obtained elsewhere	ARVs
PMTCT	Pre and post test counseling pregnant women And ARV prophylaxis	Guidelines Trained staff counseling Antenatal care	Register	HIV test	AZT / NVP in stock
TB control	Treatment	TB/HIV guidelines Trained staff	Register TB suspects TB treatment register	TB smear microscopy HIV testing (on-site or elsewhere)	TB drugs in stock
NCD control	Adult treatment and preventive services	Guidelines (diabetes, mental health)	BP cuff Stethoscope Adult scale	Blood glucose	Medicines (chronic respiratory disease, cardiac disease – from tracer list)

Service utilization

Number of out-patient department (OPD) visits per 10 000 population per year

The volume of patients at in- and outpatient facilities are not a coverage indicator as the population in need is not well-defined. Low rates, however, are indicative of poor availability and quality of services. Several countries have demonstrated that for instance OPD rates go up when constraints to using health services are removed, by for instance bringing the services closer to the people or reducing user fees. On the other hand, once rates exceed an uncertain threshold the number of visits is no longer an indicator of the strength of the health services.

Numerator

The number of visits to health facilities for ambulant care, not including immunization (can be split into children under-5 years and 5 years and over); *Denominator*: the total population for the same geographical area to compute the density

Data collection methods

Facility records and reporting forms the basis

Comparability issues

The accuracy and completeness of reporting needs 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 in-patient care and utilization include admission rates (number of new admissions per 10 000 population per year) and number of Caesarian Sections per 100 deliveries. Both indicators however tend to vary considerably 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:

- average length of stay: an indicator of quality and efficiency of health services
- bed occupancy rate: an indicator of efficiency of services.

Service quality

The first steps are availability and capacity to deliver the services. If the minimum standards are not fulfilled quality is bound to be poor. The mere availability and capacity of services however does not guarantee service quality. Assessing quality of care can be difficult in that 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 multidimensional. Care is said to be of high quality if it is effective, safe, centered on the patient's needs and given in a timely fashion.

A wide range of quality indicators are available, but measurement and monitoring are major challenges. The Organization for Economic Cooperation and Development (OECD) identified 13 indicators that could be used in a variety of its countries to assess the quality of health care delivery. 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)). The indicators waiting time to intervention for femur fractures and in-patient 30-day case fatality rates for acute myocardial infarct and stroke are more directly related to services organization and quality. In Canada, the Canadian Institute for Health Information has examined rehospitalization rates for conditions such as heart attack. 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 such as diarrhoeal disease or measles. WHO has worked around the world as part of its Integrated Management of Childhood Illness (IMCI) program to assess the level of compliance with the IMCI algorithm, specifically in areas of assessment and treatment protocols. Finally, many countries are examining the use of admission rates for conditions that are readily manageable in the primary care setting, such as asthma and diabetes.

Sample indicators for consideration in assessing health care quality (data source)	
• Effectiveness	<ul style="list-style-type: none"> ○ Case fatality rates for specific diseases (record reviews) ○ Hospital admission rate for asthma (record reviews) ○ % of sick child visits where health worker counseled mother on nutrition (observation or exit interviews) ○ % women age 40 and over who reported they had a mammogram within the past 2 years (survey) ○ % of women who received prenatal care in the first trimester (record review or survey)
• Safety	<ul style="list-style-type: none"> ○ % of providers who know hand hygiene guidelines (interview health worker) ○ Birth trauma rate to neonate per 1000 live births (record review) ○ % of adults whose provider asks about other prescriptions they are taking (observation, exit interview)
• Patient centeredness	<ul style="list-style-type: none"> ○ Among adults with recent health visit, % who stated that their provider always listened to what they had to say (exit interview, household survey) ○ Among adults with recent health visit, % who state that their provider explained things clearly (exit interview, household survey) ○ Among adults with a recent health visit, % who stated that their provider showed respect to them (exit interview, household survey)
• Timely	<ul style="list-style-type: none"> ○ % of persons who state that they have a usual source of care (survey) ○ % of emergency department visits who left without being seen (record review) ○ Median time to thrombolytic therapy or PTCA for heart attack patients (lab records)

From the perspective of the health system, quality of care needs to be assessed from a structural, process and outcome basis where possible to provide a full picture of where problems are occurring and how they might be addressed. Quality "structures" are covered in previous sections of this manual in the area of basic medicines and equipment that need to be in place to offer services according to accepted standards of practice. Following accepted practice, or the process of care, can be facilitated by a variety of tools, including self and peer assessment tools, collaborations where groups of providers or hospitals can work together on common clinical problem areas with facilitation. However, most research on such quality tools, shows that these need to be used as supports to the system of supervision. Therefore, in assessing quality of care, building in an assessment of a supervision system is also important.

In many parts of the world, data on quality of care is very difficult to come by. 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 6 months
- Interviewed provider report receiving routine: pre- or in-service training, personal supervision, both

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 between 0 and 8C at time of the 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: DELIVER /JSI for USAID. Description of indicators. 2002. Arlington VA.

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

4. Investments to improve data availability and quality

Improving data on service availability should be based on the development of a regular system of monitoring basic health resources. Such a system should include the public and private sector, is a cornerstone of monitoring the health system during the scale up in the coming decade. Currently, data on health resources, including infrastructure, workforce, and service provision, are incomplete and inaccurate and are often not useable for planning and performance assessment.

District focus with regional support

Such a system should be developed building on existing efforts, such as facility censuses and surveys, district reporting, government databases on health facilities and human resources, and the health management information system that collects service-provision information from public clinics. 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. This should be supported by the national or regional/provincial levels. In the context of decentralization, provinces are often given the responsibility for monitoring and evaluation, but little investment has been made to assist them in carrying out this role. By investing at the provincial level an independent monitoring system data can be set up that provides essential data for the district level and allows comparison between districts. Technical assistance from the central level can focus on the much smaller number of provinces. The flow of data from province to national level is much easier and more rapid.

Data collection and compilation

The health resource monitoring system would ideally use GPS devices and PDA based questionnaires to allow mapping of results, rapid data processing and report production. There is considerable experience with these devices and procedures, and facility assessment are particularly suited. Integration with district health information systems is essential. In the DHIS project facility information is referred to as semi-permanent information and can be stored in a way that it can easily be linked and analyzed in relation to services provided. Also

A system should include a complete and accurate national database of health facilities, health workers and basic services. This information should be available in every district. The database should be updated on a regular basis – e.g. once every 3–4 years. Once a solid database system is in place which can be used at the district level, the census can be done by district teams as part of their regular supervision, with a quality control component done by regional teams. In addition, facility surveys are conducted in a sample of facilities in at least one the intervening years to obtain in-depth information on the state of services, specific programmes, and quality of services.

Costs

The development of a health resources monitoring system would require investment in the national, and provincial or district levels depending on the country's ability to implement a district level system. The average costs of one facility visit to collect the data can be estimated at \$50–\$100 for a short questionnaire guided facility census, to \$100–\$200 per facility for a facility survey, and to \$200–\$500 for a comprehensive data collection with exit interviews etc. This includes preparation, training, transport, field allowances, equipment, analysis and report. An update census would cost somewhat less than the original census. In addition, resources need to be made available to improve the quality of data reported by facilities, e.g. by hospitals.

Annex: tools and further reading

MEASURE Evaluation. Profiles of health facility assessment methods.
<http://www.cpc.unc.edu/measure/publications/pdf/tr-06-36.pdf>

Health systems 2020. Health systems assessment approach: a how to manual.
<http://www.healthsystems2020.org/content/resource/detail/528/>

DELIVER project, John Snow Int. Arlington VA

<http://deliver.jsi.com/dbome/topics/monitoring/monitoringpubs/meresources/metools>

Logistics Indicators Assessment Tool (LIAT). 2006

A quantitative data collection instrument, developed by DELIVER, that assesses health commodity logistics system performance and commodity availability at health facilities. The User's Guide is included and provides detailed instructions on how to use the tool.

Assessment Tool for Laboratory Services (ATLAS). 2006.

This document is a data gathering tool developed by the DELIVER project to assess laboratory services and logistics. The ATLAS is a diagnostic and monitoring tool that can be used as a baseline survey to complete an annual assessment or as an integral part of the work planning process. The ATLAS is primarily a quantitative tool with a small sample qualitative facility survey of available commodities and equipment. The information collected using the ATLAS is analyzed to identify issues and opportunities, and to outline further assessment and/or appropriate interventions.

Logistics System Assessment Tool (LSAT). 2006.

Newly revised, this qualitative data collection instrument provides a comprehensive system-level assessment of logistics system performance for any program that manages a health commodity.

OECD work on health care quality monitoring and indicators

OECD Health care working papers [No. 23 -Health Care Quality Indicators Project Conceptual Framework Paper](#)

(March 2006). Edward Kelley and Jeremy Hurst. 2006.

<http://www.oecd.org/dataoecd/1/36/36262363.pdf>

OECD Health care working papers [No. 22 -Health Care Quality Indicators Project Initial Indicators Report](#)

(March 2006). Soeren Mattke, Edward Kelley, Peter Scherer, Jeremy Hurst, Maria Luisa Gil Lapetra and the HCQI Expert Group Members. <http://www.oecd.org/dataoecd/1/34/36262514.pdf>

Peters DH, Noor AA, Singh LP, Kakar FK, Hansen PM, Burnham G. A balanced scorecard for health services in Afghanistan. Bull WHO 2007, 85: 146–151