PROFILES OF

Health Facility Assessment Methods

MEASURE Evaluation
USAID

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The Health Facility Assessment Technical Working Group

This synopsis of health facility assessment methods was prepared on behalf of the Health Facility Assessment Technical Working Group (HFA TWG). The goal of the HFA TWG is to increase utilization of facility-based information for decision making about investments in health systems and service.[1] Towards this goal, the HFA TWG plans to pursue four main objectives:

1. Facilitate and support a broader sharing of information on existing sources of facility-based information with potential data users;
2. Improve methods for data collection from health service sites;
3. Develop a set of key indicators of the status of health systems and services that are: a) uniformly defined, b) accepted by the international community, and c) based on information obtained from health service sites in the formal health sector;
4. Develop new strategies to promote utilization of facility-based information for decision-making.

Rationale

In the past, most indicators of the status of a country's health system have been stated in terms of resources per population (e.g., physicians per 1,000 population; hospital beds per 1,000 population, etc.) or in terms of population-level outcome measures (e.g., mortality rates, service coverage rates). Such population-level indicators are useful and necessary, but they are not sufficient. Health systems are comprised of a network of health facilities, i.e. formal service delivery points. Indicators that focus on the individual facilities (or service delivery points) are also needed to show how inputs to a health system are reflected in the type, quantity, and quality of services actually available to a population. Such indicators capture information essential for needs assessments and planning investments in a health system, as well as for assessing the impact of health services on health outcomes.

Health professionals concerned with global health monitoring continue to advocate for global norms and standards that can serve as the basis for standardized measures of health systems and health programs, because such information is essential for sustaining increased investments in global health.[2] Systematic assessment of health facility performance based on accepted standards and norms may also help to improve service quality, because it conveys an expectation of adherence to standards ("what gets measured, gets done").

The expectation of adherence to standards can be further supported by identifying the essential components of health systems and services, and ensuring that their presence, and where relevant, their quality, is systematically measured and monitored. Experience has shown that an infusion of appropriate inputs can produce a rapid improvement in services, but sustaining these achieve-

[1] The term 'facility' refers to any health service delivery site operating through the formal health sector.

[2] Murray, C., Lopez, A., Wibulpolprasert, S. "Monitoring global health: time for new solutions." British Medical Journal. Volume 329, pp 1096-1100, November, 2004.

ments is not so easy. Identifying appropriate indicators of the level and quality of service provision, and then periodically measuring these indicators, can highlight the importance of sustaining positive change. In many countries an accreditation/certification system is used for this purpose. Until such a system is universally adopted, however, relying on information routinely or periodically collected from an appropriate sample of facilities is the most logical way to ensure the availability of key information.

Why we invest in health systems and facility-based services

When health outcome is measured in terms of reduced mortality, wide-spread public health and preventive measures implemented at the household and community level are found to have the largest impact on the health of a population. In the United States, for example, it has been estimated that the contribution of the health care system to reducing mortality is a relatively modest 11% when compared with the contributions attributed to lifestyle (43%), human biology (27%), and environment (19%).[3] Such a broad aggregation, however, can mask some important details. We know, for example, that access to health services in a country is not always uniform, nor is the need for health services uniformly spread across various subgroups of the population.

All societies, have sub-groups (e.g., the poor, women of reproductive age, and children less than five years) who are at higher-than-normal risk for serious illness or death if they do not receive the level and quality of services that can be provided in the formal health sector, by formally trained personnel. Indeed, the success of the formal health sector in reducing mortality is much greater when specific subgroups at risk, such as children with pneumonia or women with complications of pregnancy, are taken into account. Even when community-based services are the priority, it is important to have referral sites for those who require more complex levels of treatment than would be feasible at the community level. Furthermore, even the best preventive measures require the support of a functioning system if they are to be provided effectively (e.g., child immunization, antenatal care, family planning).

Why we need facility-based as well as population-based information for monitoring health

Data obtained from health facility assessments are useful and important in their own right, and play an equally vital role when combined with population-level data. Facility-based information tells us what is actually happening at the level of service delivery (input, process, costs, output, quality). Such information is needed for monitoring (and improving) facility-level performance and service quality. These same performance and quality factors can affect health-seeking behavior (e.g., utilization of services) and can also mediate the impact of service utilization on population-level outcome measures.

Population-based measures, such as service coverage, provide useful proxy indicators for improvements in health (e.g., a community with 90% of the children fully immunized is expected to have lower child mortality rates). Such measures, however, are not appropriate for tracking the successful treatment of illnesses within the system. The size of the sick population benefiting from quality health services, while not insignificant in number, is a small proportion of the total population. Also, there is a lag time between service implementation and a change in health outcomes measur-

[3] Dever, G. 1976. An Epidemiological Model for Health Policy Analysis, Social Indicators Research. Vol. 2, page 465.

able at the population level, and this means that population-based measures cannot be used to demonstrate the more immediate effects of service change.

Good indicators of whether investments in the formal health sector are resulting in the changes expected to improve health outcomes can be constructed from information that describes whether the anticipated health services are present and are being provided at the level of quality and quantity desired. This information can be obtained only from the facilities where the population is accessing health services.

In summary, data from both sources—facilities and populations—are needed to provide a full assessment of the functioning of a health system and its impact on population health. It is therefore important to address the current gap in the availability of health facility data.

Questions answered by facility-based information

- What is the actual infrastructure, capacity to provide services, and quality of services being provided at the sites where the population receives health services?
- What are the quantities of services being provided?
- Can changes over time be monitored to measure sustained improvements or deterioration in the provision of health services?

Current sources of facility-based information

No single source of facility-based information can meet all needs. Thus, it is important to know what sources of information are currently available, and the advantages and disadvantages of each, when deciding which is best suited to meet a given information need.

Internally generated data from routine health information systems and quality assurance activities (supervision reports, project reports):

> **Advantages:** When current information is collected as part of a routine report, it can be a useful self-evaluation measure for those service managers and providers involved in generating information. Internally generated data can increase ownership of findings, can be generated for all facilities and services, and may identify both individual facility problems and points of excellence. Because this information is routinely collected (often monthly or quarterly), it provides information for time and seasonal trend analyses.
>
> **Disadvantages:** Accuracy, timeliness, and definitions used in reporting may be inconsistent. Information reporting systems are often fragmented, leading to the use of inconsistent definitions for like-types of information. Data may be biased if there are results-based expectations of reward or fears of discipline. Internally generated data requires well-functioning health information system management to implement and maintain routine health information systems, and the amount of data that can be routinely collected needs to be weighed against the staff time required to generate the information.

Externally generated information (survey or census using interview and/or observation for data collection):

> **Advantages:** Objectivity and uniform definitions and methods in external data collection improve accuracy and comparability of information across facilities and geographic regions. It can provide validation of information collected through routine reporting, can collect large amounts of information in detail, and, if periodicity is not too frequent, can be implemented where health systems are weak.
>
> **Disadvantages:** A major disadvantage of externally generated information is that ownership by service providers and at the facility level may be lacking. In addition, externally generated information collected through sampling does not provide specific facility information and often does not provide statistically valid district-level data that may be useful for managers. Externally generated information is often collected at best annually or as infrequently as every 4-5 years, due to cost and time constraints. This does not provide current (monthly or quarterly) data for decision making, which impacts the ability to make timely changes based on data.

Limitations of internally and externally generated facility-based information

Some problems, such as why service providers do not adhere to standards when all elements to do this are present, or why people do not use services when all indicators show the services are of good quality, require in-depth understanding. These questions are best answered using qualitative methods with small selected samples. These can be targeted using facility-based process information to identify locations where there are variations in health systems/adherence to standards. Facility-based data provide information on systems and resources but do not provide a population-based context for service use or outcomes related to quality.

The following pages profile four instruments used for health facility assessment and specify their management utility. These instruments are: Service Provision Assessment (SPA), Facility Audit of Service Quality (FASQ), Health Facility Census (HFC), and Service Availability Mapping (SAM). While not an exhaustive list, these are four of the main national- and program-level protocols for facility-based assessment currently used in the field. Other smaller-scale and/or issue-specific tools have been developed and used by individual programs, and some utilize materials derived from these four main instruments. The following is a brief summary of the instruments profiled.

Service Provision Assessment (SPA): SPA was developed by MEASURE/DHS and provides objective and quantifiable information on the status of health services, as measured through resources, systems, and observed practices. The recommended frequency of implementation is once every three to five years. SPA has been conducted in six developing countries: Egypt, Ghana, Guyana, Kenya, Rwanda and Zambia. SPA is designed for national level monitoring of the health system.

Facility Audit of Service Quality (FASQ): FASQ is a relatively low-cost approach developed by MEASURE Evaluation for project and district level monitoring of service availability and quality. FASQ is derived from SPA and family planning Quick Investigation of Quality (QIQ) instruments. It provides information on the type of services, status and functionality of infrastructure, equipment, and quality of care. The recommended frequency of implementation is annual or bi-annual. Surveys using the FASQ approach have been conducted in Bangladesh, Ecuador, Kenya, and Tanzania.

Health Facility Census (HFC): Developed by the Japanese International Cooperation Agency (JICA), the HFC assesses the status of physical assets in the health sector and yield information useable for policy, planning, and management of health systems development. Designed as national-level assessment of the functionality of health systems' assets, HFC is extensive, extremely robust, and high-cost. Although implementation of HFC is recommended once every five years, the actual implementation plan should be informed by the national objectives and a consideration of need and available resources. HFC has been conducted in Malawi and Zambia.

Service Availability Mapping (SAM and PSAM): Service Availability Mapping supports decision making by providing national and district planners with the skills and tools to routinely map service and resource availability. SAM is designed for district ownership, and can be implemented as a stand alone system or integrated into the routine health information system as a supervisory tool. An offshoot of SAM, developed to respond to government and donor agencies needs to collect strategic HIV/AIDS information, is Prevention SAM (PSAM). PSAM quantifies, estimates, and maps HIV/AIDS prevention efforts carried out in health facilities and elsewhere in a community setting. The recommended frequency for conducting SAM and PSAM is annual. SAM and/or PSAM have been conducted in Kenya, Rwanda, Uganda, and Zambia. SAM and PSAM were developed by WHO; PSAM was the result of collaboration with MEASURE Evaluation.

This *Profile of Health Facility Assessment Methods* is provided to readers as a progressive, work-in-progress resource document. New profiles will be added and existing ones revised to reflect new information and advancements in the field. We hope that readers will find these descriptions useful for gaining a better understanding of the instruments and reports based on information provided by the instruments, as well as assessing the goodness of fit between specific methods and various program and policy needs. We encourage users to suggest their own ideas on improvements we might make to enhance the usefulness of subsequent revisions.

SERVICE PROVISION ASSESSMENT

Summary

The purpose of the Service Provision Assessment is to provide information on quality of health services, as measured through resources, systems, and some observed practices.

Key areas of information SPA provides

- Availability of infrastructure and resources for providing a given service;
- Facility-level systems to support quality services and maintenance of infrastructure and sources;
- Information on staff qualifications, training, and supervision collected through provider interviews;
- Adherence to standards in practice, collected through observation of client-provider interactions, and client interviews;
- Current SPA modules include: family planning, child health (outpatient services), maternal health, STI services, TB services, and an extensive module for HIV/AIDS services.

Uses

SPA presents a picture of the services and service quality that exist on any given day. It validates reported information, documenting what is reported as usually present and functioning, and the actual situation the day of the survey. Quality of services is evaluated using process indicators. SPA uses uniform definitions for elements of services being assessed, allowing data for different programs to be compiled, and allowing comparison between implementing organizations, facility types, and regions.

Limitations

SPA does not provide “gold standard” quality indicators (e.g., there is no validation of the accuracy of provider assessments and information shared). SPA also does not provide information on why services are bad or good, or why services are used or not used, except as these may relate to infrastructure, resources, and systems.

Most relevant program contexts

SPA is best used as a tool for measuring services at the regional or national level. It does not replace detailed program assessments or reports, but it does provide objective and quantifiable information on the status of health services. This allows those interested in health system development and improvement to monitor changes over time and if repeated periodically (every 3-5 years) will provide information on whether changes are sustained or not. By identifying elements deemed important, and indicating that these elements will be measured, this supports the understanding among service providers and managers of standards that are expected to be maintained, even after the intense phases of program interventions have been discontinued.

When to consider applying SPA

If you are investing in the health system or in the development of health services, and if you expect to see regional changes, then the SPA provides objective information on these elements. If multiple agencies or programs are implementing activities, with an objective for national- or regional-level changes, the SPA provides information to allow uniform measurement of changes among the various programs and implementers.

Methodology

Implementation mechanism

A SPA is most often implemented by nurses identified by the Ministry of Health (MOH) or by advertisement. A local implementing partner is identified (usually the national statistical or census office) who knows how to manage a national level survey, and an official collaboration is developed between the MOH and the implementing partner, so that the MOH provides technical oversight for the survey. A technical working group (TWG) is identified in-country for adaptation of the methodology and data collection instruments according to national needs.

Sampling methodology

Government and non-government facilities are identified and their presence validated by using existing government or NGO coordination lists. Private facilities and government non-public (military and police) have also been included for HIV/AIDS SPA surveys. Facilities are stratified by facility type, region, district, and managing authority. The sample is systematically drawn, with the final number of facilities determined so that analysis can be provided at the national level by facility type and managing authority, and at the regional level by all types of facilities (weighted for proportional representation). Over-sampling to provide program-specific information is frequently done.

Main data collection tools

- Facility resources audit questionnaire;
- Provider interview;
- Client-provider observation checklists;
- Client exit interview.

Notes on data collection

Data collectors must be familiar with the health services and have some technical qualification. Nurses are usually selected. The nurses work in teams of three. In personnel resource-poor countries, with additional training, a person with a social science background can replace one nurse on a team. Data collection for most facilities takes one full day, with two days allocated for complex hospitals. For an average country with 10 regions, the SPA survey normally uses around 15 teams of three nurses, who complete data collection over a two-month period.

Frequency

Every 3-5 years, depending on the intensity of program initiatives and the degree to which changes are expected over time.

Database structure and analysis tools
Data are entered and analyzed using CSPRO. Datasets are available in SPSS format.

Data analysis plans
There is a core analysis plan for tables that provide indicator information. Additional tables are provided as requested by local stakeholders.

Database update/maintenance
Data are public domain after national dissemination, with confidentiality protected by removing GPS and identifiers for large facilities (where there may be only one of the facility type in a region or district). The local implementer maintains a dataset, and another set will be posted on the ORC Macro Web site. GPS links can be requested.

Capacity-building

Local implementers are trained in survey management and in data processing. A template is provided for both the report and a report writing workshop held to ensure local participation and input. In many countries, the concept of measuring health services is relatively new, so the survey is providing education to health systems personnel on how services can be measured, and the value of systematic validation of reports and health information system statistics.

Reporting and accessing results

Types of datasets
Datasets include observations and exit interviews, provider interviews, and facility resource audit information, all of which can be linked. Facilities can be identified by region, facility type, and managing authority. Individual facilities cannot be identified. GPS information is available on special request. HIV/AIDS SPA survey datasets also available.

Access to datasets
To request access to a SPA dataset, send a message to Bridgette.j.james@orcmacro.com. Some datasets will be posted on the MEASURE DHS Web site.

Types of publications based on results
- Preliminary report, main report, key findings;
- Trend analyses when several surveys have been completed.

Access to publications
Visit the MEASURE DHS Web site, http://www.measuredhs.com/.

Data usage

Action to ensure use of results

Data user workshops are now planned to promote utilization of information for interventions. Data users will include provincial level program personnel and agencies working with the programs assessed. The objective will be to review SPA methods and findings in the context of country strategies and programs, with each program developing an action plan or tool for disseminating a key message.

Examples of use of results

Results are used by program developers in Ghana and Kenya to plan strategies for change. Kenya is using the data for their annual strategic planning exercise.

Support for data use

Technical assistance is provided for data user workshops for the development of visual materials to promote change based on data, and for interpreting findings in relation to national programs.

General information

Supporting organization (technical assistance) contact

Alfredo Fort
ORC Macro
11785 Beltsville Drive, Calverton, MD 20705
alfredo.fort@orcmacro.com

Countries in which SPA-type surveys have been conducted

Kenya MCH SPA	1999	Main report and dataset available
Kenya MCH and HIV/AIDS SPA	2004	
Rwanda MCH SPA	2001	Main report and dataset available
Ghana MCH SPA	2002	Main report and dataset available
Egypt MCH SPA	2002	Main report and dataset available
Egypt MCH SPA	2004	Main report and dataset available
Guyana HIV/AIDS SPA	2005	
Zambia HIV/AIDS SPA	2005	

Future plans

- Tanzania — MCH and HIV/AIDS SPA to be implemented December 2006
- Botswana — Macro TA to national survey implementers for HIV/AIDS SPA requested
- Caribbean — Macro TA to survey implementers for HIV/AIDS SPA requested

FACILITY AUDIT OF SERVICE QUALITY

Summary

The purpose of the Facility Audit of Service Quality (FASQ) is to facilitate local (e.g., project level or district level) and low-cost monitoring of availability and quality of facility-based reproductive and child health services at all government and private facilities, including private clinics.

Key areas of information FASQ provides

- Range of services offered, staffing and staff qualifications, operating hours, community linkages, selected administrative and quality control procedures;
- Facility infrastructure—electricity, water, telephone, lighting, vehicles, privacy/capacity, emergency transportation, laboratory;
- Readiness to provide quality care in six areas: family planning; STI management; antenatal care; maternal/delivery care and post abortion care' child health/welfare; and HIV prevention, treatment, and care;
- Digital maps of facilities and services available.

Uses of FASQ

- Low-tech application, minimal or no technical assistance needed for fieldwork, can be implemented by local staff;
- Quick and low cost, feasible to repeat at intervals useful for monitoring applications (1-2 years);
- Measures standardized "short list" of service R/CH quality indicators: family planning, STI, antenatal care, maternity/delivery care, post abortion care, child health care, HIV/AIDS treatment, and facility-based care and support;
- Produces integrated service profile covering all health facilities operating in district (government and private sector);
- Identifies, locates and interviews every eligible facility, no need for sampling;
- Obtains data for digital mapping to show service availability, gaps in coverage, inequities in access;
- Often adapted to focus on a particular type of service or facility;
- Builds on QIQ concept and draws heavily on DHS Service Provision Assessment and Population Council's Situation Analysis.

Limitations of FASQ

- Trade-off for rapid assessment and low cost is the loss of some detail and in-depth information that would be available, for example, from a SPA or SA. FASQ can supplement, but not replace, the more expensive in-depth methods;
- No information is collected via the FASQ audit on the actual process of delivery of care; only selected pharmaceuticals and equipment are inventoried, and infection control and staffing details are minimal;

- Additional modules can be added to assess quality of actual service delivery and patient satisfaction; however, adding these modules removes the quick, low-cost and low-tech features.

Most relevant program contexts

- District-level monitoring and evaluation;
- An M&E plan for efforts aimed at improving access and quality of reproductive and child health care;
- Programs operating in a context of information and resource constraints;
- Context where measurement of both government and private sector (nonprofit and for-profit) characteristics is needed.

When this method should be considered

When projects or local officials (e.g., project M&E units, District Health Officers) need a rapid and low-cost way to monitor a set of basic indicators of service availability and quality on an annual or biannual schedule. It is designed specifically to be useful in the context of decentralization and project-level M&E.

Methodology

Implementation mechanism

FASQ can be implemented by district health staff or local project staff. Protocol provides guidelines for adapting instruments to local conditions using a local stakeholder steering committee. The indicators measured in a FASQ audit are organized around a generic "short list," and the instrument is readily adapted to fit the indicator list.

Sampling methodology

FASQ requires that all health care facilities operating in a district be identified, located, and interviewed, thus producing a "census" of all facilities (government and private sector). No sampling is needed.

Data collection tools

Facility audit questionnaire in nine sections: General information (infrastructure, staff, drugs, supply and equipment inventories); family planning; STI management; ANC; maternity/delivery; post-abortion care; child health/welfare; HIV prevention; treatment and care; and GPS for location of facilities.

Note on data collection

Audit interview and inventories are typically completed by a single interviewer in less than 1.5 hours per facility.

Frequency
Feasible to repeat at intervals useful for monitoring applications (1-2 years).

Database structure and analysis tools
Not applicable.

Data analysis plans
Details of indicator construction and a recommended tabulation plan are part of the FASQ protocol.

Database update/maintenance
Not applicable.

Access to results:

Types of datasets
Datasets are created in any format chosen by an analyst, e.g., EpiInfo, stata, SAS, SPSS, etc.

Access to datasets
FASQ-based information is district- or program-specific; it is not intended for public use and is available only with special permission.

Types of publications based on results
Technical reports, M&E reports, wall charts, chart books.

Access to publications
By special request to MEASURE Evaluation.

Homepage/access on internet
Not available.

Data usage

Action to ensure use of results
Stakeholder involvement in adapting protocol and choosing indicators, dissemination workshop, user-friendly reporting of results.

Examples of use of results
See above

Support for data use
Not available.

General information

Supporting organization (technical assistance) contact

MEASURE Evaluation
Attn. Bates Buckner
206 West Franklin St.
Chapel Hill, NC 27516
Tel 919-966-6834
E-mail: bates_buckner@unc.edu

Note on cost consideration

FASQ can be implemented at a relatively low cost.

Funding sources

Various international donors.

Countries where FASQ-type surveys have been implemented

Kenya	2001/2002 (field test)
Botswana	2002
Bangladesh	2004
Tanzania	2005
Ecuador	2005

Publicly accessible datasets

None.

In-country contact person

None.

Future plans

The FASQ protocol is available upon request from the contact person named above.

List of key data variables/key indicators to be reported

FASQ measures a set of up to 105 standard indicators of service readiness and quality. Specifics vary by country and local choice. A list of generic versions of the indicators is available upon request.

HEALTH FACILITY CENSUS

Summary

The purpose of the Health Facility Census (HFC) is to provide evidence for policy, planning, and management of health system development with particular focus in the area of physical assets within the health sector.

Key areas of information HFC provides

- Availability and condition of physical infrastructure (health facilities building, utility, communication, and transportation);
- Location of health service delivery points (health facilities and outreach points);
- Availability and condition of equipment;
- Availability of health services;
- Headcounts of health workers.

Benefits of HFC

The HFC is designed to assist health system planners/managers to plan improvement of health service delivery systems by identifying health facilities which do not meet the criteria to provide key health services, types, and levels of capital investment required. The HFC covers all public and semi-public health facilities (thus called “census”) and collects detailed information on availability and condition of physical assets. The HFC could serve as a baseline assessment for monitoring and evaluation of investment into the health sector. Linkage with routine health information systems in a country is encouraged for update and maintenance of the data. The HFC includes participatory capital investment planning modules for planners at national as well as district levels. Typical outputs include an atlas of health facilities, a health facility database, a medical equipment database, and a capital investment cost-estimate program.

Limitations of HFC

The HFC provides limited dimensions of quality of health services: availability and condition of physical assets, availability of human resources, and physical access. It does not typically collect information on quality of care practices, patient satisfaction, and details of available human resources such as education background and training experiences. The HFC is not intended to be repeated annually.

Most relevant program contexts

The HFC is originally envisaged as part of National Health Strategic Planning efforts (sector-wide approach) in Malawi and Zambia. The information is used mainly in mid- and long-term planning.

When HFC should be considered

The HFC should be considered at the preparation phase of a national strategic planning cycle, especially when basket funding is being introduced and cost estimation for capital investment is required. A country or a region that does not have reliable information on available health resources, their conditions, and locations should consider HFC.

Methodology

Implementation mechanism

The HFC is implemented by the Ministry of Health in collaboration with the national statistical office. The Ministry of Health establishes a steering committee (SC) and a technical committee (TC). The SC sets strategic directions and periodically reviews progress. The TC is responsible for field implementation, including the development of a set of data collection tools based on models. The data collection is carried out by sub-national health offices after training by the TC.

Sampling methodology

The HFC intends to cover all public and semi-public health service providers. Major private providers are also included. In Malawi, information on outreach sites is also collected.

Main data collection tools

- Health service modules;
- GPS/location;
- Building assessment module;
- Utility module (Water, electricity, communication, and transportation);
- Medical equipment module;
- Human resource data form.

Notes on data collection

For a typical primary level health facility, the data collection by two data collectors takes one day. For secondary level hospitals (district hospital with 50 bed-capacity), it takes two to three days. For tertiary level facilities, the data collection could take up to six days depending on the complexity of infrastructure and equipment.

Key indicators

HFC measures a set of up to 105 standard indicators of service readiness and quality. Specifics vary by country and local choice. A list of generic versions of the indicators is available upon request.

Database structure and analysis tools

HFC uses a Microsoft Access database on health facilities with a customized interface and analysis and reporting functions. It also uses a an Access-based health capital investment cost estimate program.

Data analysis plans
The HFC analyzes data on physical accessibility by combining HFC data and population census.

Access to results

Types of datasets
- Health facility database;
- Cost-estimation program;
- Medical equipment database;
- Health human resource headcount.

Access to datasets
The Ministry of Health controls access to the datasets. There are no fees.

Types of publications based on data
- Atlas of health facilities;
- Report on status of health facilities;
- Report on distribution of and physical access to health services;
- Capital investment plan.

Access to publications
Public domain through the Ministry of Health.

Homepage/access on Internet
In planning.

Data usage

Action to ensure use of results
- Data feedback workshop, including a data review with data collectors and districts immediately after data collection;
- Data dissemination workshop;
- Participatory capital investment planning module.

Examples of use of results
Malawi District Capital Investment Plan 2004 - 2010.

Support for data use
Technical assistance is provided for the development of a user-interface for analysis and reporting.

General information

Supporting organization (technical assistance)

Japan International Cooperation Agency
Dai Hozumi
c/o International Cooperation Dept
St. Mary Hospital
442 Tsubuku Honmachi
Kurume, Japan
E-mail: dairiku@msn.com

Note on cost consideration

Cost of field work tends to run high due to extensive transportation requirement, especially in rural areas.

Funding sources

Japan International Cooperation Agency.

List of completed countries

- Malawi (2002);
- Zambia (2005).

Future plans

- Malawi (2007).

SERVICE AVAILABILITY MAPPING

Summary

The purpose of Service Availability Mapping (SAM) is to support decision making by providing national and district planners with the skills and tools required to map and monitor service and resource availability on a regular basis. SAM aims to provide an overview of what is available and where; it can be used to monitor scale-up and to assess equitable and appropriate distribution of services and resources.

Key areas of information SAM provides

- Availability and location of physical infrastructure (health care facilities, beds, basic medical equipment);
- Location of health service delivery points (public and private);
- Availability and location of health services (maternal and child health, HIV/AIDS, TB, malaria);
- Availability and location of health workers.

Uses

SAM is a district-owned facility monitoring system. SAM quantifies, estimates, and maps services and resources determined to be priorities by its users. SAM can be used at the district level to monitor services over time; it can be implemented into routine supervisory visits by district medical officers and their teams. A SAM survey can also be useful when there is an immediate need for information on basic infrastructure and service availability. Key outputs of the SAM process include a database of all public and private health facilities, their resources, and services. Another core output is increased capacity[4] at the national and district levels to use personal digital assistants (PDAs), global positioning systems (GPS), Pendragon,[5] and HealthMapper.

Limitations

The facility questionnaire is applied in all public and private health care facilities; it is a rapid assessment, focused on determining the availability of key programmes and resources. It is, therefore, not as detailed as other facility censuses and surveys. SAM also does not attempt to measure the quality of services, or resources. Essentially, SAM "flags" problem areas where more in-depth surveys or research may be required.

[4] *As part of the process, countries receive a number of PDAs and GPS units which will remain in-country. The software products used (Pendragon and HealthMapper) are also provided. Technical support on the use of both the hardware and software is provided by WHO/HQ, WHO Regional Offices, or their contracted partners.*

[5] *Pendragon is the software used to develop PDA-based questionnaires. As part of the exercise, persons are trained in its use in order to make adaptations as required as well as create new questionnaires.*

Most relevant program contexts

Because SAM is a district-owned facility monitoring system, it can be used to guide decision making at the district level. It is not disease-specific, and it focuses on a number of core health interventions. It is therefore a tool that can be adapted to and implemented in many settings. If a country has a particularly weak HIS, the district survey can be used to address the need for district-based information. If a strong HIS already exists, the facility survey can be used as an alternative to routine reporting. In general, both surveys are implemented during phase one in order to demonstrate feasibility and utility at both the national and district levels. SAM can provide timely information on the services available at the district level, particularly in times of rapid scale-up, where it is expected that service delivery will change quickly over a short period of time.

Methodology

Implementation mechanism

The first phase of SAM includes a national-level stakeholder workshop, questionnaire adaptation, training on PDA and GPS use, field work, training on HealthMapper and Pendragon use, and national dissemination. This initial phase focuses on demonstrating feasibility and utility for a country. If there is interest for national roll-out, a second phase, which mirrors the first phase, is implemented, but it also focuses on building capacity at the district level. During this phase training is provided by the nationals that participated in the first phase. Technical assistance is provided by WHO.

An important step during the first phase of SAM is the adaptation of the core questionnaires and the identification of health priorities. Priorities are identified through a national-level stakeholder meeting where the MOH, bilaterals, national institutions and organizations, and other interested parties come together to identify core indicators. These are then added as required into the core SAM questionnaires and applied in all districts or similar administrative levels. A separate facility questionnaire is then used in all of the public and private health facilities in a subset of districts.

Questionnaires are applied using PDAs; these facilitate data collection and reduce the time required for data entry. Teams are trained on PDA and GPS use as well as in the use of WHO's public health mapping system, HealthMapper. This software is used as the basis of analysis and is used to map the indicators of interest.

Field work is then carried out and followed by a second training session that introduces HealthMapper. This software program is provided free of charge by WHO, and persons are trained in its use in order to produce maps for inclusion in the final report. Once a report is produced, a dissemination workshop is held to present results. During this workshop, discussions are held regarding scale-up. If interest exists to implement SAM widely, phase two is planned.

Sampling methodology
The district questionnaire is generally applied in all districts within a country. For very large countries a subset of districts can be selected. The facility questionnaire is applied in all public and private health care facilities in selected districts. Selection is based on a number of factors, it is not randomly drawn. In general, SAM tries to minimize duplication of efforts to the extent possible, resulting in the selection of districts in which little information is available, or the selection of districts in which similar work may be planned; this offers the opportunity to combine complementary efforts.

Main data collection tools
- PDAs for both the district and facility questionnaires;
- GPS for collecting facility locations.

Notes on data collection
In general, teams are made up of two individuals and a driver. These teams are responsible for collecting the district-level questionnaire. Once data collection at the district level is finished, teams can be brought together and redistributed to those districts where the facility questionnaire is being applied. Under such circumstances, time for data collection can range from 2-8 weeks for the entire country. The period for data collection greatly depends on the size of the area to be covered and can be affected by poor or inaccessible roads.

The district questionnaire takes approximately 45 minutes to complete; the facility questionnaire can be completed between 45 minutes and two hours, depending on the size of the facility being visited.

Frequency
SAM is a monitoring tool; it should therefore be implemented on a regular basis. This means that it could be implemented every six months; it can be integrated into routine supervisory visits.

Database structure and analysis tools
The PDAs, once synchronized with a computer, automatically generate an Access database that can then be used as desired. This database can be imported into the HealthMapper software, allowing for the visual representation of core data. It an also be imported into a number of statistical programs, allowing for more in-depth analysis.

Data analysis plans
Data analysis is based on WHO's HealthMapper. Because the PDAs generate an Access database, analysis can also be carried out using a variety of statistical packages such as STATA.

Database update/maintenance
After the initial SAM implementation, a database resides in-country that can be updated as required. Generally, this would occur on a regular basis, with the database linked to each SAM update at the district level.

Capacity-building

The SAM process includes training on the use of PDAs, GPS, and related software. These are provided to countries and remain after the first phase has been completed. The idea is that a core set of individuals are trained well, and then used to train colleagues in other districts.

Because both the software and hardware are left behind, efforts are made to train persons on the use of software to allow use of the equipment for other efforts, as well as for the updating of SAM data.

Access to results

Types of datasets
Datasets include district and health facility databases. These are complemented by the HealthMapper country database, which includes core geographical and population information that can be used in conjunction with SAM data.

Access to datasets
Data are country-owned. If the country agrees, these are made public through WHO's Global Atlas (http://www.who.int/globalatlas/). In some cases, individuals and institutions may access the entire dataset after a data agreement has been signed between themselves and the country. All data are free of charge.

Types of publications based on results
Summary country reports are available.

Access to publications
Country reports can be provided by WHO and Ministries of Health.

Homepage/access on internet
Currently being developed.

Data usage

Action to ensure use of results
Efforts have been made to assess the utility of SAM data at the international, national, and district level. Based on an assessment of audience needs, efforts are made to assure that data use and dissemination are discussed and planned from the beginning of the process. This implies a stronger effort to assure data that are collected are relevant and presented in a manner that facilitates decision making at the national and district level.

Examples of use of results
SAM results have been used to report to Parliament on scale-up. Results can also be used to monitor scale-up, as well as report on district- and national-level indicators.

Support for data use
Funds are made available for training at the national and district levels. They are also available for dissemination and data use workshops held at the end of the initial exercise. These workshops are usually held at the national level and efforts are being made to assure that a district-level dissemination and data use process is in place.

General information

Supporting organization (technical assistance)
WHO provides technical and financial support for SAM in a number of countries. Partner organizations such as MEASURE Evaluation and Satellife also provide support.

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Note on cost consideration
Average costs for the initial phase of SAM are approximately $160,000 USD. This includes implementation of the district questionnaire in all districts, as well as implementation of the facility questionnaire in up to three districts. The range is $63,000-$313,000 USD. Supplies assumes an average of 10 PDA and GPS units and related equipment per country.

Funding sources
- U.S. Government;
- Canadian CIDA;
- UNAIDS;
- MEASURE Evaluation.

Country resources

Country	Year	Publications	Contact person	Contact Email
Uganda	2004	Service Availability Mapping (SAM) 2004: Preliminary Report	Dr. Eddie Mukooyo, Resource unit, MOH	emukooyo@yahoo.com
Zambia	2004	Service Availability Mapping (SAM) 2004: Preliminary Report	Dr. Adiele Onyeze, CBOH	onezea@zm.afro.who.int
Kenya	2005	Service Availability Mapping (SAM) 2004: Preliminary Report	Wanjala Pepela, information officer, MoH	wanjala2p@yahoo.com
Rwanda	2005	Draft district level report available	Dr. Bosco Ahoranayezu, WHO country officer	ahoranabco@hotmail.com

Future plans[1]

Country	Status		WHO funding available[2] Y/N
	Planned	On going	
Albania		X	N
Angola	X		N
Botswana		X	Y
Burkina Faso	X		N
Central African Republic (CAR)	X		N
Cote d'Ivoire	X		Y
Djibouti	X		N
Ethiopia		X	Y
Ghana		X	N
Guyana	X		Y
Haiti	X		Y
India	X		Y
Mozambique	X		Y
Namibia	X		Y
Nigeria		X	Y
Pakistan	X		N
Tanzania		X	Y
Vietnam	X		Y

[1] As of August 2005. Funds immediately available.

[2] For countries that have expressed interest but have no immediate funding, WHO will support the leveraging of funds for the first phase.

PREVENTION SERVICE AVAILABILITY MAPPING

Summary

The purpose of Prevention Service Availability Mapping (PSAM) is to support decision making by providing national and district planners with the skills and tools required to map and monitor HIV-prevention interventions and resource availability on a regular basis. PSAM aims to provide an overview of what is available and where; it can be used to monitor scale-up and assess equitable and appropriate distribution of services and resources.

Key areas of information that PSAM provides

- Availability and location of HIV-prevention interventions in health care facilities, schools, workplaces, and the community;
- Availability of HIV-prevention materials (posters, billboards, condoms, brochures), in health care facilities, schools, workplaces, and the community;
- Availability and location of health workers trained in HIV-prevention;
- Availability and location of teachers and school-based peer educators trained in HIV-prevention;
- Availability of community and workplace-based HIV-prevention peer educators.

Benefits

PSAM quantifies, estimates, and maps HIV-prevention efforts occurring in health-care facilities, schools, workplaces, and communities. It builds upon existing methodologies, namely Service Availability Mapping (SAM) and Priorities for Local AIDS Control Efforts (PLACE).

Key outputs of the PSAM process include a database of all public and private health facilities and their resources and services, including those services that are specific to HIV/AIDS prevention. Separate databases for schools, workplaces, and communities are also created.

PSAM is a work in progress. It has been field tested in Mwanza Province, Tanzania. Future plans include additional field testing in Ghana, where PLACE has been implemented in a number of districts. This field test will give us a good idea about PSAM's ability to identify locations within communities where people go to meet sexual partners.

Main data collection tools

- Personal Digital Assistants (PDAs) for both the district and facility questionnaires;
- Geographical Positioning Systems (GPS).

Database structure and analysis tools

The PDAs, once synchronized with a computer, automatically generate and an Access database that can then be used as desired. This database can be imported into the HealthMapper software, allowing for the visual representation of core data. It can also be imported into a number of statistical programs, allowing for more in-depth analysis.

Data analysis plans
Data analysis is based on WHO's HealthMapper. Because the PDAs generate an Access database, analysis can also be carried out using a variety of statistical packages, such as STATA.

General information

Supporting organization (technical assistance)
WHO provides technical and financial support for SAM and PSAM in a number of countries. Partner organizations such as MEASURE Evaluation and Satellife also provide support.

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DISTRICT QUESTIONNAIRE		
Topic Area	Variable	Variable Type
Background	District name	Text
	District population	Numeric
	Interviewer name	Text
	Respondent name	Text
	Respondent job title	Text
	Respondent contact information (telephone, fax, email, other)	Multiple—numeric and text
Health care facilities	Health care facilities in the district (public, private not for profit, and private for profit)	Numeric
Human resources	Medical doctors in the district	Numeric
	Certified/registered midwives in the district	Numeric
	Certified/registered nurses in the district	Numeric
	Clinical officers/assistant medical officers in the district	Numeric
	Nursing assistants/nursing aides in the district	Numeric
	Laboratory technicians/technologists in the district	Numeric
	Pharmacists and dispensers in the district	Numeric
	HMIS personnel/records assistants in the district	Numeric
	Health service managers in the district	Numeric
	Certified/registered HIV counselors in the district	Numeric
	Community health workers in the district	Numeric
	Social workers in the district	Numeric
	Indoor residual spraying teams in the district (for malaria control)	Y/N
Infrastructure	Beds (in-patient, delivery and maternity)	Numeric
	Oxygen facilities in the district	Y/N
	X-ray facilities in the district	Y/N
Communications and technology resources	Basic landline connections in the district	Y/N
	Short wave radios in the district	Y/N
	Cellular networks in the district	Y/N
	Cellular phones for district health teams	Y/N
	Computers for district health teams	Y/N
	Internet connections for district health teams	Y/N

Topic Area	Variable	Variable Type
Blood transfusion services	Availability of service in the district	Y/N
	Interruption in blood supply in the district	Y/N
	Testing and screening of blood supply	Y/N
	Blood collection from donors	Y/N
	Main donor type (voluntary, paid, relatives, or friends)	Y/N
Laboratory services	Blood count, availability in the district	Y/N
	Blood sugar levels, availability in the district	Y/N
	Hemoglobin, availability in the district	Y/N
	Liver enzymes, availability in the district	Y/N
	CD4 cell counts, availability in the district	Y/N
Injection and sterilization practices (most common type used)	Needles and syringes used in the district (disposable, re-usable, auto-destruct)	Y/N
	Sterilization in the district (autoclave, sterilizers, pressure pots, boiling pot, other)	Y/N
Donor assistance to the district	Global fund presence	Y/N
	Other bilateral presence	Y/N
	Multilateral presence	Y/N
	NGOs	Y/N
	NGOs (HIV specific)	Y/N
Patient payment for public health services or drugs	TB treatment	Y/N
	Pain relief drugs (HIV specific)	Y/N
	Drugs for opportunistic infections	Y/N
	ARVs	Y/N
	Oral Rehydration Salts (ORS)	Y/N
	Delivery kits	Y/N
	Oral contraceptive pills	Y/N
Social marketing programs (presence of)	Condom	Y/N
	HIV antibody testing	Y/N
	Insecticide-treated bed nets (ITNs)	Y/N
	ITN outlets	List of ITN outlets

Topic Area	Variable	Variable Type
Training	Integrated management of childhood illness	Estimated coverage (none, < 50%, >50%, all)
	Safe motherhood/life-saving skills	Estimated coverage (none, < 50%, >50%, all)
	Adolescent sexual and reproductive health	Estimated coverage (none, < 50%, >50%, all)
	HIV/AIDS opportunistic infection treatment	Estimated coverage (none, < 50%, >50%, all)
	HIV counseling	Estimated coverage (none, < 50%, >50%, all)
	HIV counseling and testing	Estimated coverage (none, < 50%, >50%, all)
	HIV antibody testing using rapid tests	Estimated coverage (none, < 50%, >50%, all)
	Prevention of mother-to-child transmission (PMTCT)	Estimated coverage (none, < 50%, >50%, all)
	Infection control/universal precautions	Estimated coverage (none, < 50%, >50%, all)
	STI diagnosis and treatment	Estimated coverage (none, < 50%, >50%, all)
	Family planning	Estimated coverage (none, < 50%, >50%, all)
	Diagnosis and treatment of malaria	Estimated coverage (none, < 50%, >50%, all)
	Health services management	Estimated coverage (none, < 50%, >50%, all)
	HMIS	Estimated coverage (none, < 50%, >50%, all)
Other	Drug stock out in the district	Estimated coverage (none, < 50%, >50%, all)
	Facilities providing presumptive intermittent preventive therapy for malaria in the district	Estimated coverage (none, < 50%, >50%, all)
	Facilities providing ART in the district	Estimated coverage (none, < 50%, >50%, all)
	Facilities providing HIV prevention education in the district	Estimated coverage (none, < 50%, >50%, all)
	Facilities providing HIV antibody testing in the district	Estimated coverage (none, < 50%, >50%, all)
	Facilities with access to improved water supply in the district	Estimated coverage (none, < 50%, >50%, all)
	Indoor residual spraying for malaria control in the district	Estimated coverage (none, < 50%, >50%, all)
	Immunization campaigns in the district	Estimated coverage (none, < 50%, >50%, all)
	Indoor residual spraying for malaria control in last month	Y/N
Facility listing	Facilities providing PMTCT, HIV counseling and testing, ART, TB diagnosis (laboratory), TB diagnosis (clinical), TB treatment, Cesarean section, Emergency blood transfusions, outreach, STI diagnosis and treatment, malaria diagnosis (microscopy)	List of all health facilities in the district with indications of whether or not they provide the selected services

FACILITY QUESTIONNAIRE		
Topic Area	Variable	Variable Type
Background	District name	Text
	Facility name	Text
	Ownership (public, private, for- and not-for-profit)	Text
	Type (third, second, or first level hospital; hospital affiliated health center, health center, health post/ dispensary)	Text
	Interviewer name	Text
	Respondent name	Text
	Respondent job title	Text
	Respondent contact information (telephone, fax, email, other)	Multiple-numeric and text
	Facility geographic coordinates	Numeric
General characteristics	Out-patients, previous month	Numeric
	In-patients, previous month	Numeric
Infrastructure	Beds (in-patient, delivery and maternity)	Numeric
	Main source of water (piped, open well, borehole, surface, rain, tanker truck)	Text
Communications and technology resources (available and functional)	Landline telephone	Y/N
	Cellular telephones	Y/N
	Short wave radio	Y/N
	Computers	Y/N
	Internet connections	Y/N
Guidelines (available and accessible)	Management of malaria	Y/N
	Integrated management of childhood illness (IMCI)	Y/N
	Treatment and care of opportunistic infections	Y/N
	HIV antibody testing and counseling	Y/N
	Prevention of mother-to-child transmission	Y/N
	Management of TB/HIV co-infection	Y/N
	Integrated management of adult illness (IMAI)	Y/N
	STI diagnosis and treatment	Y/N
	Family planning	Y/N

Topic Area	Variable	Variable Type
General purpose equipment (available and functional)	X-ray machine	Hospitals only, Y/N
	Oxygen systems/cylinders	Hospitals only, Y/N
	Autoclave for sterilization	Hospitals only, Y/N
	Infusion kits	Hospitals only, Y/N
	Operating theater	Hospitals only, Y/N
	Anesthetic machine	Hospitals only, Y/N
	Hemocytometer	Hospitals only, Y/N
	Cytoflowmeter	Hospitals only, Y/N
	Ambulance	Hospitals only, Y/N
	Latex gloves	All facilities, Y/N
	Refrigerator	All facilities, Y/N
	Blood pressure machine	All other health facilities, Y/N
	Stethoscopes	All other health facilities, Y/N
	Microscopes	All other health facilities, Y/N
	Adult weighing scale	All other health facilities, Y/N
	Weighing equipment, under five	All other health facilities, Y/N
	Thermometers	All other health facilities, Y/N
Injection and sterilization practices (most commonly used)	Needles and syringes used in the district (disposable, re-usable, auto-destruct)	Y/N
	Sterilization in the district (autoclave, sterilizers, pressure pots, boiling pot, other)	Y/N
	Environmental disinfectant	Y/N
Human resources (work full time, are present today)	Medical doctors	Numeric
	Clinical officers/assistant medical officers	Numeric
	Certified/registered midwives in district	Numeric
	Certified/registered nurses in district	Numeric
	Nursing assistants/nursing aides in district	Numeric
	Laboratory technicians/technologists	Numeric
	Pharmacists and dispensers	Numeric
	HMIS personnel/records assistants in the district	Numeric
	Health service managers	Numeric
	Certified/registered HIV counselors	Numeric
	Community health workers	Numeric
	Social workers	Numeric

Topic Area	Variable	Variable Type
Training	Integrated management of childhood illness	Numeric
	Safe motherhood/life-saving skills	Numeric
	Adolescent sexual and reproductive health	Numeric
	HIV/AIDS opportunistic infection treatment	Numeric
	HIV counseling	Numeric
	HIV counseling and testing	Numeric
	HIV antibody testing using rapid tests	Numeric
	Prevention of mother-to-child transmission (PMTCT)	Numeric
	Family planning	Numeric
	STI diagnosis and treatment	Numeric
	Infection control/universal precautions	Numeric
	Diagnosis and treatment of malaria	Numeric
	HMIS	Numeric
	Health services management	Numeric
	Drug and supplies management	Numeric
Drugs and commodities (availability of)	Injectable antibiotics	Y/N
	Oral antibiotics	Y/N
	Oral contraceptive pill	Y/N
	Condoms	Y/N
	Iron	Y/N
	Vit A capsules	Y/N
	Measles vaccine	Y/N
	First line anti-malarial	Y/N
	Second line anti-malarial	Y/N
	Artemisin combination therapy	Y/N
	Antihypertensive drugs	Y/N
	Magnesium sulphate	Y/N
	Ergometrine	Y/N
	Oral rehydration salts (ORS)	Y/N
	Brochures, posters or other materials on safer sex practices	Y/N

Topic Area	Variable	Variable Type
Facility-based laboratory services	HIV antibody test	Test done on-site (same day), test done off site, service not available (no referral)
	Haemoglobin	Test done on-site (same day), test done off site, service not available (no referral)
	Blood count	Test done on-site (same day), test done off site, service not available (no referral)
	Blood glucose levels	Test done on-site (same day), test done off site, service not available (no referral)
	Giemsa stain for malaria	Test done on-site (same day), test done off site, service not available (no referral)
	RPR or VDRL for syphilis	Test done on-site (same day), test done off site, service not available (no referral)
Interventions	HIV antibody testing and counseling (available)	Y/N
	Clients, HIV antibody testing and counseling	Numeric
	Received results, HIV antibody testing	Numeric
	Antenatal services (available)	Y/N
	Clients, antenatal services	Numeric
	HIV counseling, pregnant women	Y/N
	HIV testing, pregnant women	Y/N
	Nevirapine or AZT, PMTCT	Y/N
	Clients, PMTCT	Numeric
	Clients, postpartum family planning	Numeric
	ARV therapy (available)	Y/N
	Enrollment, ARV therapy program	Numeric, total, and disaggregated by gender (male-female) and age (under 15, 15 and up)
	Clients picked up drugs (HIV specific)	Numeric
	STI diagnosis and treatment (available)	Y/N
	Clients, STI diagnosis and treatment	Numeric
	Receipt of PEPFAR funding	Y/N
	Working relationships with NGOs or CBOs (HIV specific)	Y/N
	HIV prevention outreach	Y/N
	Smear microscopy for TB diagnosis (available)	Y/N
	Register (TB specific)	Y/N
	TB treatment (available)	Y/N
	DOTS	Y/N
	Child immunization services (available)	Y/N
	Children immunized	Numeric

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