

MEASURE Evaluation

Working Paper Series

Guidance for Selecting and Using Core Indicators for Cross-Country Comparisons of Health Facility Readiness to Provide Services

Health Facility Assessment Technical Working Group

September 2007

WP-07-97



MEASURE Evaluation is funded by the U.S. Agency for International Development (USAID) through Cooperative Agreement No. GPO-A-00-03-00003-00 and is implemented by the Carolina Population Center at the University of North Carolina in partnership with Constella Futures, John Snow, Inc., Macro International Inc., and Tulane University.

Carolina Population Center
University of North Carolina at Chapel Hill
206 W. Franklin Street
Chapel Hill, NC 27516
Phone: 919-966-7482
Fax: 919-966-2391
measure@unc.edu
www.cpc.unc.edu/measure



This working paper series is made possible by support from the U.S. Agency for International Development (USAID) under Cooperative Agreement No. GPO-A-00-03-00003-00. The opinions expressed are those of the authors, and do not necessarily reflect the views of USAID or the U.S. government.

The working papers in this series are produced by MEASURE Evaluation in order to speed the dissemination of information from research studies. Most working papers currently are under review or are awaiting journal publication at a later date. Reprints of published papers are substituted for preliminary versions as they become available. The working papers are distributed as received from the authors. Adjustments are made to a standard format with little further editing.

This and other working papers are available, free of charge, from the MEASURE Evaluation Web site, <http://www.cpc.unc.edu/measure>.



Acknowledgments

This document was drafted by Bolaji Fapohunda, Nancy Fronczak, Shanthi Noriega-Minichiello, and John Spencer. The Health Facility Assessment Technical Working Group (HFA TWG) thanks all participants at the HFA TWG 4th Technical Meeting, held at the World Health Organization, August 3-4, 2006, which ratified the core indicators. Special thanks go to Alfredo Fort for helping to refine methods for the health facility readiness composite indicator and all working group members for reviewing documents and providing comments.

Last, but not least, the group is grateful to John Novak, whose provocative questions at the HFA TWG maiden meeting provided the impetus for developing the core indicators. The group thanks the U.S. Agency for International Development (USAID) Office of HIV/AIDS (OHA) team for providing subsequent clarifications that fostered the investigation. Many thanks go to Sian Curtis of the MEASURE Evaluation project for putting seed money in the HFA TWG and to Tim Williams of JSI, Inc. for providing technical oversight for this work.

Acronyms

ANC	antenatal care
CA	cooperating agency
CI	confidence intervals
CSS	care and support services
CSTS+	Child Survival Technical Support Plus
FASQ	Facility Audit of Service Quality
FP	family planning
GIS	geographic information systems
GPS	global positioning system
HF	health facility
HFC	Health Facility Census
HFA	health facility assessment
HFA TWG	Health Facility Assessment Technical Working Group
HIS	health information system
HMIS	health management information system
HMN	Health Metrics Networks
IMR	infant mortality rate
JICA	Japan International Cooperation Agency
NASCOP	National AIDS and STD Control Program
MMR	maternal-mortality ratio
NLTP	National Land Transport Program
OI	opportunistic infections
ORS	oral rehydration salt/solution
PMTCT	prevention of mother-to-child transmission
SAM	Service Availability Mapping
SPA	Service Provision Assessment
USAID	U.S. Agency for International Development
USG	United States government
U5	under five years
VCT	voluntary counseling and testing
WHO	World Health Organization

Introduction

Health information systems depend on health facility surveys for data. International and program-based approaches using health facility data include the Service Provision Assessment (SPA), Macro International; the Facility Audit of Service Quality (FASQ), MEASURE Evaluation; the Service Availability Mapping (SAM) census, World Health Organization (WHO); and the Health Facility Censuses (HFC) with a focus on infrastructure, Japan International Cooperation Agency (JICA). Several rounds of data from these sources are available for selected countries. A key gap in facility-based information is that definitions of indicators and data elements differ from approach to approach. These differences limit comparisons of data across surveys, countries, and time. Given the cost of surveys and the importance of facility data for health-system planning and management, countries cannot afford redundancies and duplication in health facility data collection. A core set of indicators, defined and collected the same way, regardless of the approach used for collecting the facility-based data, can accelerate the availability of data useful for health system analysis at a minimum cost while reducing redundancies and duplication of data-collection efforts.

Availability of simple, standardized core indicators will facilitate assessment of health service delivery at the national level. These indicators will also encourage the production of nationally representative and comparable datasets. The lack of appropriate data has left attempts to provide representative and comparable datasets moribund, despite the colossal investment in health systems performance improvement. Nationally representative datasets on health facilities could enable programs to forgo costly multiple small-area studies of health services in favor of uniformly collected national-level data. This is important because country-level data collection is a key bottleneck in the M&E of services important to achieving public health impacts.¹

Uniformly defined indicators for health-service provision currently do not exist, but they have great potential. A core set of indicators of health service provision will do for health facility-based assessments what indicators such as infant mortality rates (IMR), maternal-mortality ratio (MMR) and under-five mortality rates (U5) have done for population-based household surveys. A core set of indicators will give a snapshot view of health facility readiness to provide services and facilitate resource mapping; these indicators will also allow surveys to note and measure change over time.

The recommended core indicators in this document were selected based on existing tools and data (see Table 1). The indicators assess health systems' functionality rather than the health status of the targeted population. The latter is important and relevant for accounting for public health investment in the long run, but its proximate determinants include factors that are diverse and beyond health facility investment.² Utilizing core indicators of health system performance

¹ For more information, see the Center for Global Health Development's Panel on HIV/AIDS M&E titled *Is it Really Working: HIV/AIDS Initiatives, and the Pressing Challenge of Evaluation*, January 23, 2006, held at the Carnegie Endowment for International Peace, Washington, DC.

² See Murray C, Evans D. *Health Systems Performance Assessment, Debates, Methods and Empiricism*. Geneva: World Health Organization; 2003.

could serve as a departure point for donors, policy-makers, and experts, as well as public health students and other people interested in funding, planning, or just studying the health systems.

Criteria for selecting the indicators

A core set of indicators for monitoring health facility assessment should:

- ❖ cover the critical components of systems capacity to provide essential services; these components include infrastructure; availability of communication and transportation equipment for emergency care; staffing; support for quality information; and infection control;
- ❖ apply broadly to all areas of the health system while focusing on components necessary to support quality services regardless of the service, (i.e., each indicator should be cross-cutting, reflect outcomes of health systems development outcomes and provide a snapshot view of health systems functionality and/or performance);
- ❖ be simple, measurable, attributable, reliable, and time bound;
- ❖ be relevant at primary, secondary and tertiary levels of health systems, and simple enough to be collected both through routine program monitoring as well as using special evaluation surveys; and
- ❖ if possible, be comparable to information that one or more of the emerging cross-country assessment approaches (SPA, FASQ, or via any large scale data-collection methodology, such as a HFC) already collects.

Method of work

The HFA TWG prepared a preliminary list of indicators in consultation with stakeholders from a broad spectrum of public health organizations. To obtain several U.S. Agency for International Development (USAID)-based cooperating agency (CA) inputs into the most appropriate indicators and definitions, the team leveraged ORC-Macro meetings conducted in the spring of 2006 to review the SPA methodology. Piggy-backing the indicator development on the SPA review meetings helped the group conserve funds. The draft preliminary indicators were developed based on the inputs from the stakeholder meetings. The list was presented for the larger group's consideration at the fourth HFA TWG technical meeting, held at WHO in the summer of 2006, and a consensus at the meeting resulted in a recommended list of core indicators (Table 1).

The HFA TWG made efforts to coordinate the indicators with global initiatives, most notably the WHO and the Health Metrics Network (HMN) health systems metrics development initiative. Another critically important component of the core indicator effort was harmonizing existing data-collection methods and standardizing instruments used to obtain data for the core indicators. This effort resulted in the model questionnaire (Appendix A), which can either be used as is or adapted by organizations conducting health facility assessment (HFA) work. The specific steps for developing the indicators are summarized below:

Steps the HFA TWG took when selecting the core indicators

The HFA TWG:

- ❖ reviewed background information on existing approaches (SPA, HFCs, and FASQ) and indicators currently being collected, and prepared the HFA-indicators matrix (the matrix highlighted overlaps and differences in the types of data being collected; these overlaps identified common indicators important for all approaches that can be collected with minimum changes in the existing methodologies);
- ❖ leveraged SPA review to obtain stakeholders' input into indicators and definitions most appropriate for assessing and comparing improvements in health systems performance (based on this consultation and expertise within the group, the group drafted preliminary indicators, described data elements for the selected domains, which indicated actual questions and how data were recorded [e.g., by recorded response or observation], and secured agreement around the meaning and definitions of the selected indicators);
- ❖ organized an international consultative meeting to reach agreement on selected core indicators (HFA experts from USAID, USAID-implementing agencies, United Nations Children's Fund [UNICEF], Health Metrics Network [HMN], WHO, and other organizations participated in the meeting; WHO's agreement to host this meeting underscored the independence of the process and supported broad-based ownership of the results);
- ❖ based on comments, finalized the indicators in Table 1 (the associated operational documents, including the data-reference sheet and tabulation plan showing how to calculate the indicators, were being developed);
- ❖ field-tested the core indicators in the context of existing methodologies, both on the national level through SPA and HFC, and at the program level through the Rapid HFA surveys by CSTS+ and FASQ (most of the key approaches have also conventionally collected these indicators in their surveys, so there is empirical evidence for their feasibility); and
- ❖ disseminated the core indicators and associated data-collection tools and explanatory notes to the field using Web-based publications, data-use orientation workshops, and direct communication to the relevant stakeholders.

Table 1: Core Indicators of HF Readiness to Provide Services

<i>Domain</i>	<i>New Indicators</i>	<i>Notes/definitions (otherwise, none)³</i>
Signature Domain	Date of survey Health facility registry Health facility identification (ID) Health facility name Health facility contact information, e.g. postal address (optional) Health Facility administrative unit GPS coordinates (latitude, longitude waypoint ID)	Unique identifier for HF. For details, see www.cpc.unc.edu/measure/publications
I. Infrastructure	% facilities on day of interview with: 1. Power (a grid and/or functional generator with fuel) 2. Improved running water source within 500 meters of facility 3. Room with auditory and visual privacy for patient consultations 4. Toilet facilities for clients (UNICEF definitions) 5. Communication equipment 6. Emergency transport 7. Overnight beds for 24 hour emergency care	I.1 Generator may be reported I.2 UNICEF definition I.2-5 Must be observed I.4 UNICEF definition I.6 May be reported
II. Infection Control	% of facilities on day of interview with: 8. Sterilization equipment 9. Storage and disposal of sharps and infectious waste 10. Disinfectants 11. Latex gloves 12. Sharps box/container 13. Single use —standard disposable (5cc) or auto-disable syringes 14. Soap	All items observed II.8 Functioning autoclave or dry heat sterilizer (observed equipment, reported response for functional status is accepted II.9 Incinerated and/or buried waste in protected environment with no unprotected waste observed in facility or on grounds
III. Services offered	% of facilities that offer 15. Antenatal Care (ANC) 16. Facility-based delivery 17. Family Planning 18. Child immunization 19. Sick child care U5 (curative care for children offered daily) 20. Sexually transmitted infection (STI) treatment 21. Prevention of mother to child transmission (PMTCT) 22. Counseling & Testing for HIV 23. Palliative care (including treatment of opportunistic infections) 24. Antiretroviral treatment (ART) or follow up 25. Tuberculosis (TB) treatment or follow up	III.19 curative care for children offered daily III.21 Routine counseling and testing, with maternal ART drug(s) approved by national guidelines. Denominator: facilities providing delivery and/or ANC
IV. Availability of Guidelines	% of facilities on day of interview with guidelines readily available in service area*: 26. ANC 27. Delivery 28. FP 29. Immunization 30. Sick child care U5 31. STI treatment 32. PMTCT 33. C&T 34. Palliative care (including OI) 35. ART treatment or follow up 36. TB treatment or follow up	Guidelines need to be observed in the proximity of the service area and observed on the survey day. Score applies for each service. Minimum content: IV.30 Treatment of pneumonia and malaria (if applicable) for children IV.34 Treatment of common OIs, management of severe pain in AIDS clients

³ *Training Manual for Core Indicators* provides complete definitions along with the tabulation plan for calculating the indicators using the questions in the sample Core Indicator Questionnaire.

<i>Domain</i>	<i>New Indicators</i>	<i>Notes/definitions (otherwise, none)³</i>
	* If service is offered	
V. Staffing	37. % of HF staff providing client services present versus those working at facility present on day of facility visit (benchmark=all staff working should be present) 38. % of facilities with a 24 hour emergency staff roster	V.37 Clinical staff. Indicator can be broken down by qualification – e.g. physicians, nurses, midwives, HIV counselors (does not include cleaners, janitors, etc.). Collected at lower than hospital level. V.38 Disaggregated by type of facility (e.g. hospital, health center)
VI. Health Service Statistics	% of facilities on day of interview with: 39. Up to date patient/client register for each assessed service that is offered. 40. Copy of standard monthly report 41. Evidence of data use	Items must be observed VI.39 Assess only for outpatient department (OPD) in large hospitals VI.40 Any report from the previous 3 months VI.41 Existence of wall graphs, charts, posters, <u>or</u> at least one meeting in 3 months to review data for service implications.
VII. Lab	% of facilities with capacity to conduct the test or a system for receiving results from tests conducted outside facility for: 42. Blood Count (CBC) 43. Hemoglobin 44. Malaria 45. Urine glucose and protein 46. HIV 47. TB microscopy 48. Syphilis serology	Equipment must be observed, reagents may be reported, otherwise systems (records) for receiving results from outside is observed. VII.42 If CBC capacity exists, hemoglobin is present as well. VII.44 e.g. through rapid test or microscopy VII. 45 any tests is okay VII.46 e.g. through rapid test or ELISA VII.48 e.g. through VDRL or RPR
VIII. Pharmaceuticals/treatments	% of facilities on day of interview with: 49. First line anti-malarial for children 50. Antibiotics for U5 pneumonia 51. Antibiotics for newborn sepsis 52. Condoms (male) 53. Any other(s) long or short-term contraceptive Method* 54. First line ARV for PMTCT * 55. Any oxytocic* 56. Mild to strong opiates (i.e., codeine, morphine) 57. Dextrose 5% in normal saline/normal saline/Ringer Lactate with IV infusion set 58. Oral Rehydration Salts (ORS) 59. Vitamin A 60. Folic acid 61. Iron supplement 62. All first line TB drugs * * if service is offered	* Presence (observed) of at least one drug per category with valid date of expiration at least one drug per category, VIII.49 Country specific VIII.50 Country specific VIII.54 Country specific VIII.62 Country specific * Possibly add first line ART for HIV/AIDS
IX. Supplies	% of facilities on day of interview with <u>functional</u> : 63. Adult scale 64. Infant scale 65. Thermometer 66. Stethoscope 67. Sphygmomanometer and BP cuff 68. Resuscitation equipment (tube & mask) for newborn	Items must be observed in the outpatient service area if facility has outpatient services. IX.64 Must have gradations of 100 grams

Using the core indicators

Sources and tools for data collection — The primary sources and tools are SPA, FASQ, and HFC. Appendix A presents a core-indicator module that draws on these sources. The module can also be used in national programs or as a supervisory tool to monitor health facility (HF) performance routinely. Small programs can also use the module to obtain assess HF readiness or capacity for scaling-up small programs or for determining new initiatives.

Monitoring change over time — Core-indicator data will be presented using simple summary statistics, including crosstabs and measures of central tendencies, and various presentation formats, including pie charts, bar charts, line graphs, etc. An analysis plan will be developed to tie results presentation to the core indicators. Analysis will include a strong GIS component. Examples of the type and quality of spatial-data analysis that can be expected, as well as additional data requirements, are provided elsewhere in this document.

To monitor how relevant factors change over time, baseline estimates for each indicator are collected; then baseline estimates are compared with follow-up assessments. For projects using survey data, relevant statistical tests will detect errors associated with the survey estimates. Eliminating these errors will increase the significance and reliability of observed changes; reliability and validity of measures are the two major factors affecting the accuracy of estimates based on sample surveys. Reliability (or variance) can be controlled by increasing sample sizes or choosing a better sampling design, (e.g., samples based on simple random-sampling techniques rather than samples based on purposive-sampling techniques). To avoid erroneous interpretations of results, a confidence interval is placed around the proportions to indicate the range in which the true value is likely to lie. To determine change over time in each element, the confidence intervals (CI) around the estimates are first inspected for overlaps. If the CI in Time 1 overlaps with Time 2, then the difference observed over the two time periods is not statistically significant, since it is not known exactly where in the CI the true values lie. If the CI in Time 1 does not overlap with CI in Time 2, then a t-test or chi-squared test is used to confirm that the observed changes between Time 1 and 2 are significant.⁴

Developing a composite indicator of HF readiness — Debates on the sensibility of composite indicators and how to develop them fill the current literature. Sources cited in Munda and Nardo (2003) state that composite indicators are valuable communication tools but that the methodological difficulties in creating them often render their accuracy and reliability questionable.⁵

⁴ Adapted from *Quick Investigation of Quality (QIQ): A User's Guide for Monitoring Quality of Care in Family Planning*. Chapel Hill, NC: MEASURE Evaluation; 2001. Available at: <http://www.cpc.unc.edu/measure/publications/pdf/ms-01-02.pdf>.

⁵ Munda G, Nardo M. *On the Methodological Foundations of Composite Indicators Used for Ranking Countries*. Ispra, Italy: Joint Research Centre of the European Community; 2003. Available at: <http://www.yale.edu/envirocenter/epmbibliography.htm>); Freudenberg M. 2003. Composite indicator of country performance: a critical assessment. *OECD Science, Technology, and Industry Working Papers, 2003/16* [doi: 10.1787/405566708255]. Paris: OECD Publishing; 2003.

Bearing this problem in mind, these authors proposed a simple index that assumes equal weight for each data domain (i.e., no one domain is of higher value than the others). In this framework, every domain receives a score of 10. If a domain is composed of more than one element, the numerical score for each element depends on the total number of elements within that domain. An element in a domain with a total of 10 elements is worth one point (it will be recorded as one if present and zero if not present). If a domain contains two elements, each element in that domain will be worth five points. Table 2 details the scoring method. The working group's proposed minimum data set has nine possible dimensions, so the maximum total score is 90 and the minimum is 0. Change in the value of the composite indicator for specific domains and overall between Time 1 and Time 2 (or baseline and follow-up assessments) is determined based on change in the score for specific dimensions as well as the total score. The estimates are obtained by adding indices for each of the nine domains or across all data elements to obtain estimate for the grand composite. Overall, the closer the total score is to 90, the more ready a health system is to provide services. The items included in the composite are determined based on the fitness to purpose. Other authors have utilized other methods such as correlation analysis or principal-component analysis. However, the consensus in the literature is that the fitness to purpose is by far the most superior criteria for determining data elements within the composite.

Hong and his colleagues (2006) recently used this scoring methodology in a BioMed Central study. They applied standardized weights to a set of 22 indicators hypothesized to affect the quality of family planning services. Hong and colleagues entered the resulting composite index into a multivariate model predicting the effect of quality on family planning (FP) use. The result showed that the effect of the composite (quality of FP services) on FP use remained statically significant after controlling for other covariates (logistics and socioeconomic characteristics of respondents).⁶ The proposed scoring methodology follows this strategy, but it may be refined based on additional experience.

⁶ Hong R, Montana L, Mishra V. Family planning services quality as a determinant of use of IUD in Egypt. *BMC Health Ser Res* 2006. 6(79):1-8.

Table 2: Method for Calculating Composite Indicator of HF Readiness to Provide Services

Domain	New Indicators	Score
Signature Domain	Date of survey Health facility registry Health facility identification (ID) Health facility name Health facility contact information, e.g. postal address (optional) Health Facility administrative unit GPS coordinates (latitude, longitude waypoint ID)	N x 10/7
I. Infrastructure	% facilities on day of interview with: 1. Power (a grid and/or functional generator with fuel) 2. Improved running water source within 500 meters of facility 3. Room with auditory and visual privacy for patient consultations 4. Toilet facilities for clients (UNICEF definitions) 5. Communication equipment 6. Emergency transport 7. Overnight beds for 24 hour emergency care	N x 10/7
II. Infection Control	% of facilities on day of interview with: 8. Sterilization equipment 9. Storage and disposal of sharps and infectious waste 10. Disinfectants 11. Latex gloves 12. Sharps box/container 13. Single use —standard disposable (5cc) or auto-disable syringes 14. Soap	N x 10/7
III. Services offered	% of facilities that offer 15. Antenatal Care (ANC) 16. Facility-based delivery 17. Family Planning 18. Child immunization 19. Sick child care U5 (curative care for children offered daily) 20. Sexually transmitted infection (STI) treatment 21. Prevention of mother to child transmission (PMTCT) 22. Counseling & Testing for HIV 23. Palliative care (including treatment of opportunistic infections) 24. Antiretroviral treatment (ART) or follow up 25. Tuberculosis (TB) treatment or follow up	N x 10/11
IV. Availability of Guidelines	% of facilities on day of interview with guidelines readily available in service area*: 26. ANC 27. Delivery 28. FP 29. Immunization 30. Sick child care U5 31. STI treatment 32. PMTCT 33. C&T 34. Palliative care (including OI) 35. ART treatment or follow up 36. TB treatment or follow up * If service is offered	N x 10/11
V. Staffing	37. % of HF staff providing client services present versus those working at facility present on day of facility visit (benchmark=all staff working should be present) 38. % of facilities with a 24 hour emergency staff roster	N x 10/2

Domain	New Indicators	Score
VI. Health Service Statistics	% of facilities on day of interview with: 40. Up to date patient/client register for each assessed service that is offered. 40. Copy of standard monthly report 41. Evidence of data use	N x 10/3
VII. Lab	% of facilities with capacity to conduct the test or a system for receiving results from tests conducted outside facility for: 42. Blood Count (CBC) 43. Hemoglobin 44. Malaria 45. Urine glucose and protein 46. HIV 47. TB microscopy 48. Syphilis serology	N x 10/7
VIII. Pharmaceuticals/treatments	% of facilities on day of interview with: 49. First line anti-malarial for children 50. Antibiotics for U5 pneumonia 51. Antibiotics for newborn sepsis 52. Condoms (male) 53. Any other(s) long or short-term contraceptive Method* 54. First line ARV for PMTCT * 55. Any oxytocic* 56. Mild to strong opiates (i.e., codeine, morphine) 57. Dextrose 5% in normal saline/normal saline/Ringer Lactate with IV infusion set 58. Oral Rehydration Salts (ORS) 59. Vitamin A 60. Folic acid 61. Iron supplement 62. All first line TB drugs * * if service is offered	N x 10/14
IX. Supplies	% of facilities on day of interview with <u>functional</u> : 63. Adult scale 64. Infant scale 65. Thermometer 66. Stethoscope 67. Sphygmomanometer and BP cuff 68. Resuscitation equipment (tube & mask) for newborn	N x 10/6
Total	Total possible score = 90*	
*Total possible score = 90 applies irrespective of HF type. Where domain elements are adjusted for HF type, (e.g. health post/dispensary might not be assessed for 24-hr emergency services), the total score for applicable elements is adjusted to sum up to 10 for the domain score		

Using core-indicator data for decision-making

Consistent use of core set of indicators could encourage the assessment of public health results at the national or sub-national level. The signature domain in Table 1 details the information that needs to be collected.⁷ When seeking to understand public health service delivery, knowing the location of the facilities is important. Mapping the location of facilities allows easy identification of areas of shortages and over-service. In addition to assisting in program analysis, the collection

⁷ For guidance on how to collect facility location, see Health Facility Assessment Technical Working Group. *Signature Domain and Geographic Coordinates: A Standardized Approach for Uniquely Identifying a Health Facility*. Chapel Hill, NC: MEASURE Evaluation; 2007. Available at <http://www.cpc.unc.edu/measure/publications/pdf/wp-07-91.pdf>.

of health facility locations can promote development of a country's spatial-data infrastructure and assist program planning beyond the health sector. This can ensure a closer integration between health and other social services and/or make rapid scale-up of programs possible. In addition to indicators in Table 1, other data elements to make this analysis possible could include population information (locations and populations of villages, communities, and other settlements), and wards, districts and other administrative units. Geographic layers that impact health-care behavior such as roads or water features could also provide richer analysis (see Figures 1-3).

Recording the latitude and longitude on a facility survey makes it possible to use a geographic information systems (GIS) to produce maps and conduct analysis. Global positioning system (GPS) receivers can easily capture a facility's latitude and longitude in a matter of minutes. These receivers are relatively cheap, and the point collection can be easily added to facility survey efforts.

Figures 1-4 below are examples of how core-indicator data have been translated into information for addressing health impacts and equity issues. The maps are based on data from the 2004 WHO health facility census, also known as SAM. Figure 1 presents the percentage of facilities by district providing prophylaxis to pregnant women for malaria prevention. Figure 2 presents facilities delivering emergency caesarian sections. Similar information on the availability of care and support services (CSS) and opportunistic infections (OI) treatment is presented for Barbados. Both services are geographically dispersed but, unlike the Kenyan map, the Barbados map lacks population information, making it difficult to assess equity issues in this population. Figure 3 presents the number of doctors per 100,000 population. In each of these maps, the core indicators are linked to the underlying populations to determine service availability and identify where additional services might be beneficial. For instance, Figure 1 shows that a preponderance of malaria prevention services in the sparsely populated areas, while some moderately populated areas lack services. Sub-national patterns in service availability are also presented. In the western part of the country, services tend to be concentrated in cities, but in the eastern part they are spread out more.

The potential for using the core indicator data for action was demonstrated in the subsequent uptake of the Kenya HFC by the Kenya Ministry of Health. A preliminary report of the study was disseminated to all health ministry department heads, the permanent secretary, divisional heads, senior program managers, and relevant district health management teams.⁸ The data were utilized in a wide range of contexts, specifically including the following:

- ❖ The United Nations Population Fund, Family Health International, Kenya National AIDS and STD Control Program, Reproductive Health, National Land Transport Program, and malaria-control programs have used the report to scale-up services in health facilities.

⁸ World Health Organization, Kenya Ministry of Health. *Service Availability Mapping (SAM)*. Geneva, Switzerland: World Health Organization; 2007. Accessed 17 September 2007 at: <http://www.who.int/healthinfo/systems/samreportkenya.pdf>.

- ❖ The Kenya Ministry of Health has encouraged all districts to develop annual operational plans and use thematic maps, including census results, to develop their annual operations plans, which went into effect in July 2006.
- ❖ A national team within the Kenya Ministry of Health used technical and financial support from WHO to train at least two people in every province as training-of-trainers for health mapper and GIS.
- ❖ Kenya Ministry of Health used the report to justify employing more technical staff.
- ❖ The Population Council used part of the census results to complete a Kenyan service assessment.
- ❖ The national Kenyan HMIS included part of the census results in its annual performance report.
- ❖ HMIS used HealthMapper to map areas that have been having epidemics.

Figure 2: Facilities able to provide emergency caesarian sections, Kenya Service Availability Mapping 2004.

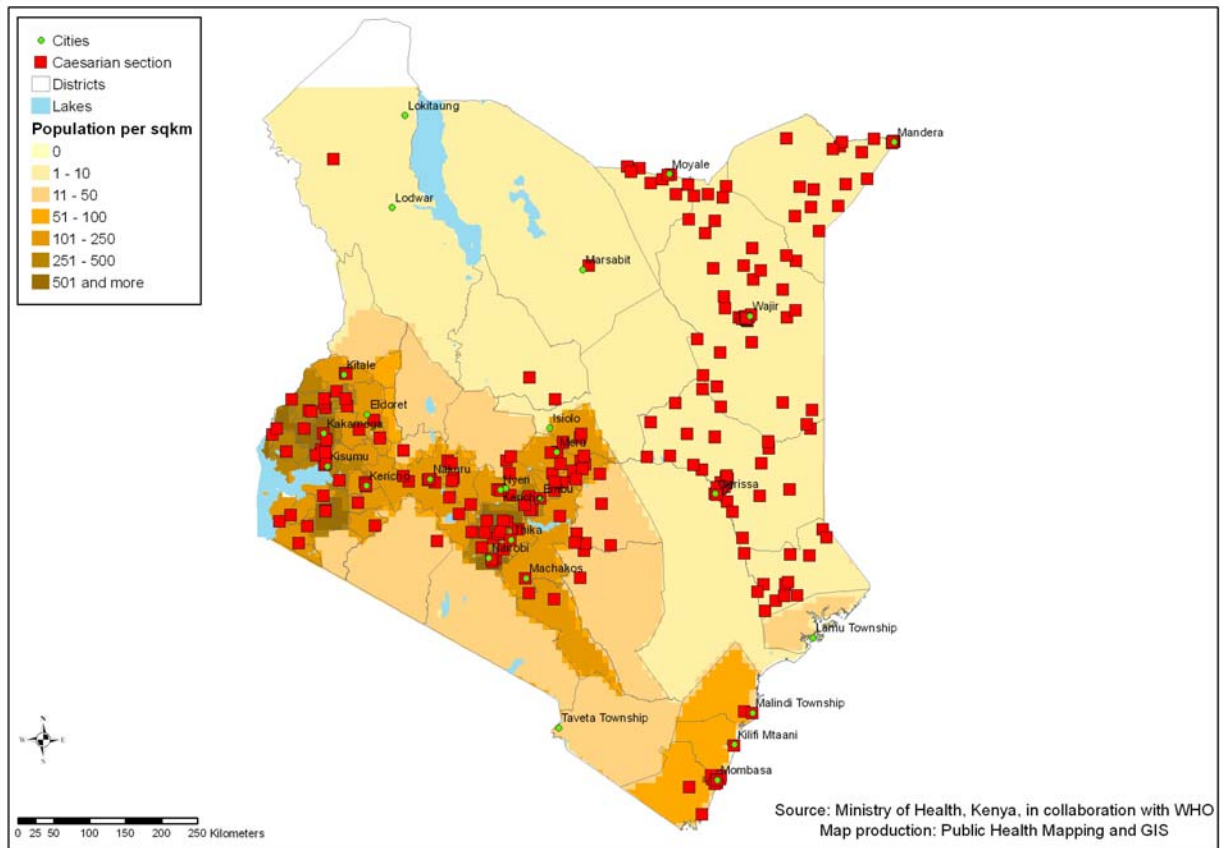


Figure 3: Number of doctors per 100,000 population, by district, Kenya service availability mapping, 2004.

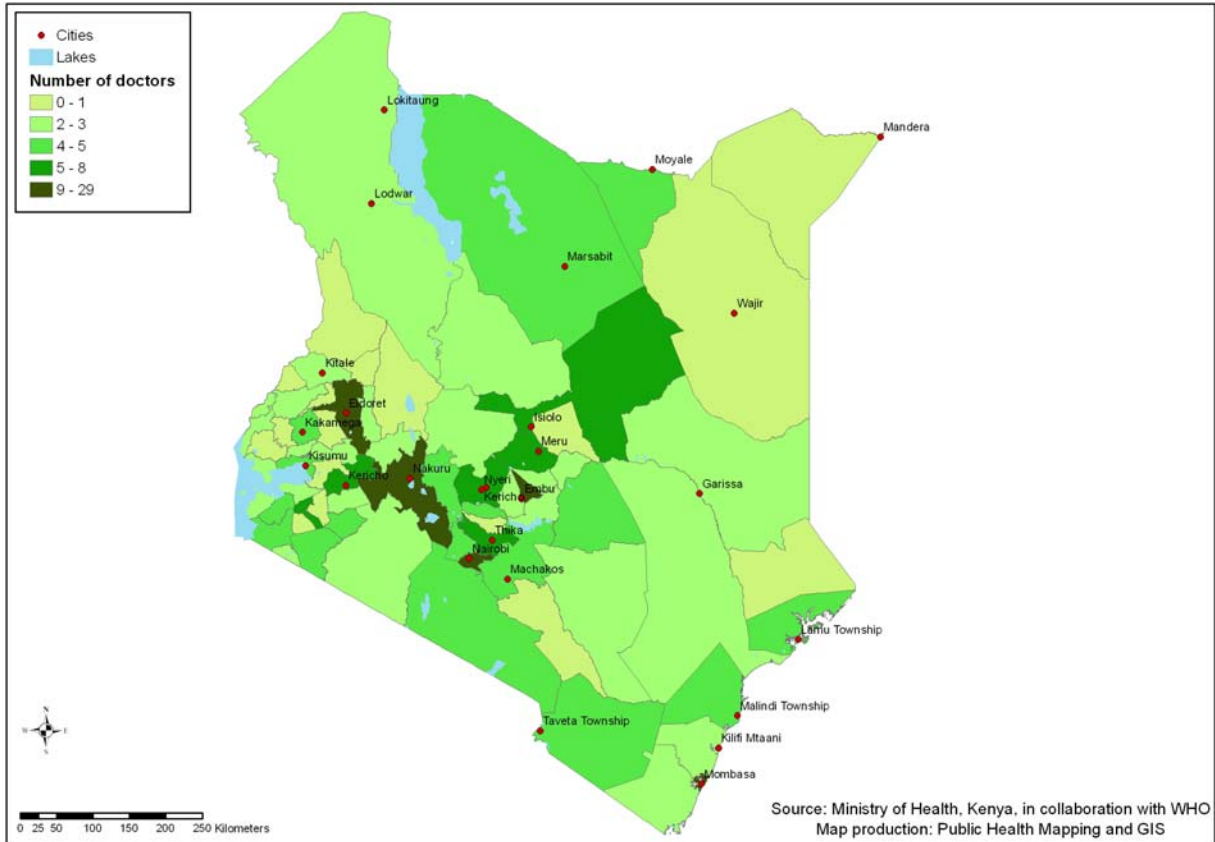
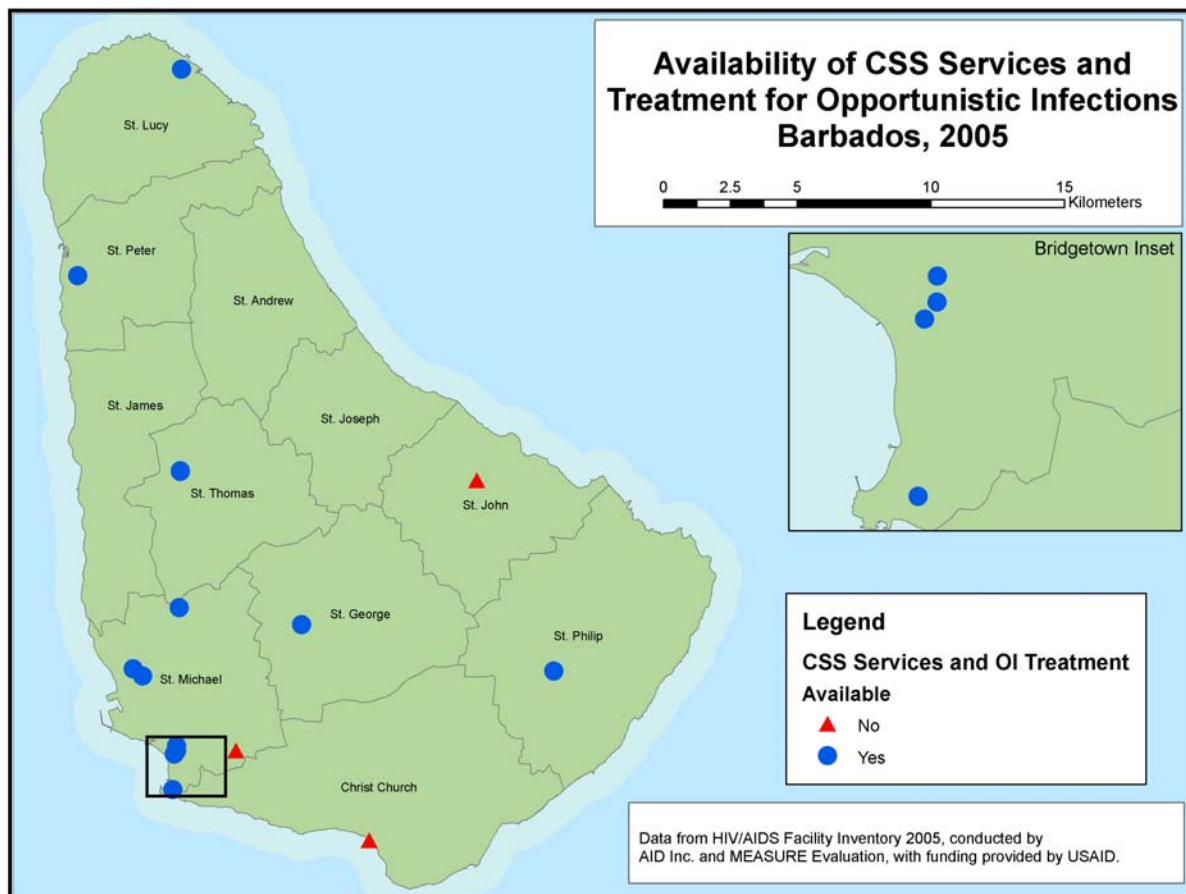


Figure 4: Availability of care and support services (CSS), including treatment of opportunistic diseases (OI), Barbados, 2005.



Source: Health Facility Assessment Technical Working Group. 2007.

Conclusion

This document discussed the processes for selecting core indicators of health facility readiness to provide services. The indicators were developed because of a lack of international standards for comparing health system performance across countries.⁹ These indicators are formulated and harmonized across the key HFA approaches, so different countries will be able to collect the indicators in the same way. Using these indicators will make HFA data a more useful tool to describe and monitor health systems in developing countries.

⁹ Lindelow M, Wagstaff A. Health facility surveys: an introduction. Unpublished paper. Washington, DC: The World Bank; 2001.

Appendix A

FACILITY AUDIT FOR CORE INDICATORS

BACKGROUND INFORMATION			
001.	Date (dd/mm/yyyy):	□□/□□/□□□□	
002	Province/region _____	PROVINCE CODE □□	
003.	District name: _____	DISTRICT □□ CODE	
004.	Facility name and address	FACILITY □□□ CODE	
005.	Facility type (country adapt)	Please check one box below.	
	Facility type	Tertiary/third-level hospital: HF providing training as well as specialized care.....1 Second-level referral hospital: generally the provincial-level hospital. HF offers surgery, Specialized care.....2 First-level hospital: generally district-level hospital. Offers basic inpatient services, may or may not offer surgery3 Hospital-affiliated health center.....4 Health post/dispensary: (usually offers only a few outpatient services).....5 Walk-in surgery/private doctor office or clinic.....6 Other health center (usually offers multiple services).....7	
006	Managing authority		
01	Government	<input type="checkbox"/>	
02	Private for-profit	<input type="checkbox"/>	
03	Private non-profit (mission, faith-based NGO, etc)	<input type="checkbox"/>	
007.	Facility geographic co-ordinates:	Latitude □□ □□□□□□ Longitude □□□□ □□□□□□	
008	Facility contact:	Fax: _____ Phone: _____	
NO.	QUESTION	RESPONSE	SKIPS
	INFRASTRUCTURE AND INFORMATION FOR CLASSIFYING LEVEL OF SERVICES FACILITY CAN OFFER		

NO.	QUESTION	RESPONSE	SKIPS			
101	<p>How many overnight or inpatient beds, in total, does the facility have?</p> <p>NOTE: DATA COLLECTORS WILL WANT TO ENSURE THAT THE STANDARD FOR ACCEPTABLE BEDS FOR THE COUNTRY (E.G., W/ MATRESS OR PLYWOOD) IS CLARIFIED.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>				
102	<p>Is there 24-hour staff coverage? IF YES, ASK TO SEE A DUTY ROSTER FOR NIGHT STAFFING. IF STAFF LIVE ONSITE, MARK '1'.</p>	<p>YES, 24-HOUR DUTY ROSTER OBSERVED OR STAFF LIVE ONSITE 1</p> <p>YES, 24-HOUR COVERAGE BUT NO DUTY ROSTER AND NO STAFF LIVING ONSITE2</p> <p>NO DUTY ROSTER OBSERVED OR NO 24-HOUR COVERAGE 3</p>				
103	<p>Does this facility have the staff and resources to conduct surgery using general anesthetic?</p>	<p>YES..... 1</p> <p>NO..... 2</p>				
104	<p>Is there at least one site in the outpatient clinic area where both auditory and visual privacy can be maintained for client services? (IF FACILITY ONLY HAS INPATIENTS, ASSESS INTAKE AREA.)</p>	<p>YES..... 1</p> <p>NO..... 2</p>				
105	<p>Does this facility have a working phone or shortwave radio to call outside that is available at all times client services are offered? CLARIFY THAT IF 24-HOUR EMERGENCY SERVICES ARE OFFERED, THIS REFERS TO 24-HOUR AVAILABILITY.</p>	<p>YES, ONSITE OR WITHIN 5 MINUTE WALK..... 1</p> <p>YES, WITHIN 5 MINUTES, NOT ONSITE..... 2</p> <p>ONLY PAY PHONE OR PERSONAL CELL PHONE 3</p> <p>NO..... 6</p>				
106	<p>Does this facility have a functional ambulance or other vehicle on-site for emergency transportation for clients? IF YES, ASK IF THE VEHICLE IS FUNCTIONING AND IF THERE IS FUEL AVAILABLE. ACCEPT REPORTED RESPONSE.</p>	<p>YES, FUNCTIONING WITH FUEL 1</p> <p>YES, NOT FUNCTIONING OR NO FUEL 2</p> <p>NO..... 3</p>				
107	<p>Is electricity functioning now? (CHECK TO SEE IF ELECTRICITY CAN BE TURNED ON).</p>	<p>YES..... 1</p> <p>NOT FUNCTIONING 2</p> <p>NEVER HAVE ELECTRICITY 3</p>				
108	<p>Does this facility have a back up or stand-by generator for electricity? IF YES, ASK IF THE GENERATOR IS FUNCTIONING. AND IF FUEL IS AVAILABLE. ACCEPT REPORTED RESPONSE.</p>	<p>YES, FUNCTIONING WITH FUEL 1</p> <p>NOT FUNCTIONING OR NO FUEL 2</p> <p>NO..... 3</p>				
109	<p>What is the MAIN source of water for this facility</p>	<p>SAFE WATER SOURCE 1</p>				

NO.	QUESTION	RESPONSE	SKIPS
	<i>at this time?</i>	PIPED, PUBLIC TAP, STANDPIPE, TUBEWELL/BOREHOLE, PROTECTED DUG WELL, PROTECTED SPRING, RAIN WATER, OTHER WATER SOURCE..... 2 UNPROTECTED DUG WELL, UNPROTECTED SPRING, CART WITH SMALL TANK/DRUM, TANKER-TRUCK, SURFACE WATER (RIVER,DAM, LAKE, POND,ETC.) BOTTLED WATER (ENOUGH) FOR HANDWASHING 3 OTHER _____ 6 (SPECIFY) NO WATER SOURCE 0	→111
110	Is water available today?	YES..... 1 NO..... 2	
111	Is there a toilet (latrine) that is available for clients to use? IF YES, INDICATE THE TYPE OF LATRINE AVAILABLE. <i>Note: You might want to collect the different types of latrines as separate answers.</i>	YES, IMPROVED TYPE 1 FLUSH/POUR FLUSH: TO PIPED SEWER SYSTEM OR SEPTIC TANK OR PIT LATRINE, PIT LATRINE (VIP) OR OTHER WITH SLAB, COMPOSTING TOILET YES, OTHER TYPE..... 2 FLUSH/POUR TO OPEN FIELD/ STREAM, PIT LATRINE WITHOUT SLAB, OPEN PIT, HANGING, BUCKET NO..... 3	→201
112	INDICATE THE CONDITION OF THE TOILET/LATRINE.	FUNCTIONING 1 NOT FUNCTIONING 2 UNABLE TO OBSERVE 3	
SERVICES, HEALTH INFORMATION, AND STAFFING			
201	Does this facility compile information on services provided? IF YES, ASK TO SEE A COPY OF A COMPILED REPORT FOR ANY OF THE PREVIOUS 3 MONTHS.	YES, OBSERVED..... 1 YES, REPORTED BUT NOT SEEN2 NO..... 3	
202a	Are there any reports on meetings that have been held to review data from the monthly reports for service implications? IF YES, ASK TO SEE A COPY OF A REPORT.	YES, OBSERVED DURING PAST 3 MONTHS..... 1 YES OBSERVED FOR MORE THAN 3 MONTHS AGO 2 YES, REPORTED BUT NOT SEEN3 NO..... 4	
202b	Are there any graphs, charts, or posters that are made from data routinely collected at this facility that are displayed for your and/or client	YES, OBSERVED.....1 YES, REPORTED BUT NOT SEEN	

NO.	QUESTION	RESPONSE		SKIPS
	information and use (IF YES, ASK TO SEE A COPY OF GRAPHS, CHARTS AND POSTERS ON DISPLAY)2 NO GRAPHS, CHARTS, OR POSTERS FROM ROUTINE DATA ON SITE3		
203	For each of staff category (country adapt to fit qualification categories) please indicate the number of male and of female staff assigned to the facility, and the number present today. If staff genders are unknown, put responses in male box.			
	Type of staff*	Full-time assigned	Full-time present today	Part-time Assigned Present today
01	Physician, doctor,	<input type="text"/>	<input type="text"/>	<input type="text"/> () () ()
02	Registered / certified nurse	<input type="text"/>	<input type="text"/>	<input type="text"/> () () ()
03	Registered/certified midwife	<input type="text"/>	<input type="text"/>	<input type="text"/> () () ()
04	Health service manager	<input type="text"/>	<input type="text"/>	<input type="text"/> () () ()
05	Laboratory qualification	<input type="text"/>	<input type="text"/>	<input type="text"/> () () ()
06	Pharmacist	<input type="text"/>	<input type="text"/>	<input type="text"/> () () ()

*COUNTRY ADAPT STAFF LIST.

DOMAIN: SERVICES OFFERED: GO TO WHERE EACH OF THE FOLLOWING SERVICES IS OFFERED, SO THAT YOU CAN SEE THE ITEMS THAT NEED TO BE IN THE SERVICE AREA, AND CAN GATHER INFORMATION FROM THE MOST KNOWLEDGEABLE PERSON.					
204	I want to ask about services that are routinely offered in this facility and how often services are offered. For each of the following services, please tell me if the service is available, and if so, the number of days per week the the facility (or village outreach conducted by facility staff) routinely offers this service.				
	SERVICE	(A)	(B)	(C)	(D)
		Service ever offered at facility or through outreach	SERVICE GUIDELINES IN SERVICE AREA (SCAN FOR MINIMUM CONTENT)	REGISTER WITH (MINIMUM INFORMATION)	REGISTER UP-TO-DATE (REGISTER IS UP-TO-DATE IF ENTRY WAS MADE IN LAST 7 DAYS)DATE LAST ENTRY WAS MADE
01	Immunization services for children	YES.....1 NO..... 2→02	OBSERVED.....1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	OBSERVED1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
02	Family planning	YES.....1 NO..... 2→03	OBSERVED.....1 REPORTED BUT NOT SEEN2 NOT AVAILABLE.....3	OBSERVED1 REPORTED, BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
03	Antenatal care	YES.....1 NO..... 2→04	OBSERVED.....1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	OBSERVED1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
04	Any normal delivery services	YES, 24 HOURS.....1 YES, NOT 24 HOURS.....2 NO..... 3→05	OBSERVED.....1 REPORTED, BUT NOT SEEN2 NOT AVAILABLE3	OBSERVED1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
05	PMTCT services (HIV test and ARV)	YES.....1 NO..... 2→06	OBSERVED.....1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	OBSERVED1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
06	Treatment for STIs	YES.....1 NO..... 2→07	OBSERVED.....1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	OBSERVED1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
07	Treatment or client follow up for TB	YES.....1 NO..... 2→08	OBSERVED.....1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	OBSERVED1 REPORTED BUT NOT SEEN2 NOT AVAILABLE3	WITHIN LAST 7 DAYS1 MORE THAN 7 DAYS AGO2
08	Voluntary	YES.....1	OBSERVED.....1	OBSERVED1	WITHIN LAST 7

	counseling and testing (client walk-in)	NO..... 2→9	REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	DAYS 1 MORE THAN 7 DAYS AGO 2
09	Diagnostic counseling and testing for HIV (provider initiated)	YES..... 1 NO..... 2→10	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	WITHIN LAST 7 DAYS 1 MORE THAN 7 DAYS AGO 2
10	Palliative treatment services (OI or pain) for AIDS	YES..... 1 NO..... 2→11	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	WITHIN LAST 7 DAYS 1 MORE THAN 7 DAYS AGO 2
11	ART treatment or client follow up	YES..... 1 NO..... 2→12	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	WITHIN LAST 7 DAYS 1 MORE THAN 7 DAYS AGO 2
12	Curative child care	YES..... 1 NO..... 2→301 # days per week: in facility () In outreach location ()	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	OBSERVED 1 REPORTED BUT NOT SEEN 2 NOT AVAILABLE 3	WITHIN LAST 7 DAYS 1 MORE THAN 7 DAYS AGO 2

EQUIPMENT AND SUPPLIES				
IF ANY OF THE EQUIPMENT LISTED BELOW IS AVAILABLE, ASK TO SEE IT AND REPORT IF IT IS FUNCTIONING TODAY				
EQUIPMENT		OBSERVED AND FUNCTIONING		NOT AVAILABLE
301	AUTOCLAVE (W/ HEAT SOURCE IF NOT ELECTRIC) OR DRY-HEAT STERILIZER	1		2
302	THE FOLLOWING EQUIPMENT MUST BE AVAILABLE IN THE OUTPATIENT AREA OR INTAKE AREA FOR "INPATIENT ONLY" FACILITIES TO BE AVAILABLE.			
		OBSERVED AND FUNCTIONING		NOT AVAILABLE
01	Adult weighing scale	1		2
02	Infant weighing scale (gradations at minimum 100 gm)	1		2
03	Thermometer	1		2
04	Stethoscope	1		2
05	Blood pressure cuff	1		2
06	Resuscitation equipment for new born:			
06a	Tube	1		2
06b	Mask	1		2
303	For each of the following diagnostic tests, please tell me if this facility can conduct the test and has all items so it can be done today, or if the facility has a system for having the test conducted elsewhere but getting results returned for follow up by this facility.			
	DIAGNOSTIC TEST	YES, DOES TEST		TEST NOT AVAILABLE
		TEST CAN BE CONDUCTED ONSITE TODAY	OBSERVED SYSTEM FOR TEST OUTSIDE, RECEIVE RESULTS BACK	
01	Complete blood count	1	2	3
02	Anemia (hemoglobin, hematocrit, or litmus paper)	1	2	3
03	Malaria (rapid test or microscopy)	1	2	3
04	Urine glucose (dipstix or benedicts test)	1	2	3
05	Urine protein (dipstix or acetic acid)	1	2	3
06	HIV (rapid, ELISA, or Western Blott)	1	2	3
07	AFB for TB	1	2	3
08	Syphilis (VDRL or RPR)	1	2	3
304	PHARMACEUTICALS			
	ASK TO SEE EACH OF THE FOLLOWING DRUGS AND, IF PRESENT, CHECK TO SEE IF AT LEAST ONE UNIT HAS A VALID EXPIRATION DATE*.	PRESENT WITH AT LEAST ONE UNIT WITH VALID DATE OF EXPIRATION	NO VALID UNIT PRESENT	
01	Antibiotics for newborn sepsis	1	2	
02	COUNTRY FIRST-LINE ANTIMALARIAL FOR CHILDREN.	1	1	
03	CO-TRIMOZAZOLE suspension for pediatric infections or COUNTRY FIRST-LINE PNEUMONIA TREATMENT FOR CHILDREN	1	1	
04	Male condoms	1	2	
05	Oral contraceptive pills	1	2	
06	Any injectable contraceptives	1	2	

07	ARVS FOR PMTCT For example, AZT or NVP	1	2
08	Country first-line ART for HIV	1	2
09	Country first-line TB drug (e.g., Isoniazid (INH), Rifampicin (RIF), Pyrazinamide (PZA), Streptomycin (SM), Ethambutol (ETB), or Zidovudine (AZT))	1	2
10	Oxytocin injection for use during second and third stage of labor, and for treatment of postpartum hemorrhage (10 IU in 1 ml ampoule)	1	2
11	Codeine, morphine, diclofenac capsules/tabs or other mild to strong opiate	1	2
304 cont	PHARMACEUTICALS	PRESENT WITH AT LEAST ONE UNIT WITH VALID DATE OF EXPIRATION	NO VALID UNIT PRESENT
09	Oral rehydration salts (ORS)	1	2
10	Vitamin A capsules (any dose)	1	2
11	Folic acid (may be combined with iron)	1	2
12	Iron tables (may be combined with folic acid)	1	2
13	Intravenous for plasma expansion (5% dextrose in normal saline[D5NS], normal saline[0.9%Ns], ringers lactate)	1	2
14	Infusion set for intravenous	1	2
305	STORED ITEMS FOR PREVENTION OF INFECTION		
01	Chlorine-based disinfectant	1	2
02	Latex gloves (clean or sterile)	1	2
03	Sharps container	1	2
04	5 ml plastic syringe in sterile packet	1	2
05	19- or 21-gauge needle in sterile packet (may be with syringe)	1	2
06	Hand-washing soap (bar or liquid)	1	2

	DISPOSAL OF HAZARDOUS WASTE MATERIALS	SHARPS	INFECTED WASTE	
400	Now I would like to ask you a few questions about the waste disposal practices for sharp items such as needles or blades, including filled sharps containers , and for infected waste, such as bandages and intravenous tubes. For each type of item, what is the final disposal process for filled sharps boxes?	INCINERATOR HIGH TEMPERATURE (DEMONFORT OR 2 CHAMBER)..... 1 CHAMBER DRUM/BRICK.... OPEN BURNING FLAT GROUND-NO PROTECTION PIT OR PROTECTED GROUND DUMP WITHOUT BURNING FLAT GOUND-NO PROTECTION COVERED PIT OR PIT LATRINE OPEN PIT OR PROTECTED GROUND REMOVE OFFSITE STORED IN COVERED CONTAINER STORED IN OTHER PROTECTED ENVIRONMENT STORED UNPROTECTED OTHER _____ (SPECIFY) NEVER HAVE SHARPS WASTE	(a) 01 02 03 04 05 06 07 08 09 10 96 95	(b) 01 02 03 04 05 06 07 08 09 10 96 95
401	Are the burned/dumped sharps/infectious waste routinely buried? IF YES, CHECK TO SEE IF THE BURIAL COMPLETELY COVERS THE SHARPS/INFECTIOUS WASTE	YES, WASTE COMPLETELY COVERED YES, WASTE PARTIALLY COVERED NO BUIAL OF BURNED/DUMPED SHARPS/INFECTIOUS WASTE	1 2 3	1 2 3
402	ARE THERE ANY UNPROTECTED SHARPS OR INFECTIOUS WASTE OBSERVED ANYWHERE IN THE FACILITY OR ON THE FACILITY GROUNDS? THIS INCLUDES SYRINGES, NEEDLES, AND BANDAGES	YES..... NO, OR NOT APPLICABLE		