

*East African Medical Journal Vol. 86 (Supplement) January 2009*

A RAPID ASSESSMENT OF DISTRICT HEALTH SYSTEMS IN SIX COUNTRIES OF THE WHO AFRICAN REGION  
S. P. Barry, MD, MPH, Programme Manager, Health Policies and Service Delivery, WHO Regional Office for Africa, BP 06, Brazzaville, Congo, S. Bakeera, MD, Masters in Health Management, Planning and Policy, Freelance Consultant, P.O. Box 2762, Kampala, Uganda, J. M. Kirigia PhD., Programme Manager, Health Financing and Social Protection and L.G. Sambo, MD, MPH, Regional Director, WHO Regional Office for Africa, BP 06, Brazzaville, Congo

Request for reprints to: Dr. S. P. Barry, Health Policies and Services Delivery Programme, Division of Health Systems and Services Development, WHO Regional Office for Africa, BP 06, Brazzaville, Congo

## A RAPID ASSESSMENT OF DISTRICT HEALTH SYSTEMS IN SIX COUNTRIES OF THE WHO AFRICAN REGION

S. P. BARRY, S. BAKEERA, J. M. KIRIGIA and L.G. SAMBO

### ABSTRACT

**Objectives:** This paper reviews the adequacy of inputs and processes at district level to support outputs and outcomes of service delivery at district level using a rapid assessment. The outputs included in this study are those considered essential for the attainment of the Health related Millennium Development Goals(MDGs).

**Data sources:** A questionnaire based rapid District Health Systems assessment was conducted among six African countries during the year 2007.

**Study selections:** The study took place in a random sample of six out of 19 English speaking countries of the WHO African region. These countries are Ghana, Liberia, Namibia, Nigeria, Sierra Leone and Uganda.

**Data extraction:** The data was extracted from the questionnaires, entered and analysed in Excel spreadsheet.

**Data synthesis:** In spite of the variability in quality and completeness of reporting on the selected parameters, this paper does indicate that according to country norms and standards, the inputs and processes are insufficient to lead to acceptable outputs and outcomes, especially those related to the MDGs. An important point to note is that comparability across countries is made on the basis of individual country norms and standards. Implicit in this assessment is that country norms and standards are reasonable and are appropriate for the attainment of the MDGs. However reasonable the country norms and standard are, it is unlikely that the low resource base as well as weak organisational and managerial capacities in most countries will support effectively the attainment of the MDGs.

**Conclusion:** Most countries manage to offer the essential health services at all levels of care despite the relatively low level of inputs. However, their level of quality and equity is debatable. The general trend is that provision of the essential health services is more at the higher levels of care prompting concerns for the populations served at lower levels of care. There is also a tendency to have wide variations in the performance of service delivery geographically as well as at the different levels of the health systems. This paper recommends further exploration of the impact of focusing on improving quality of existing health services while increasing quantity of service delivery points to achieve higher coverage of essential health services.

### INTRODUCTION

The District Health System (DHS) is part of the National Health System and generally covers one

district – an administrative unit that is home to between 50,000 and 300,000 people (1). The DHS embraces all the organisations, institutions and resources in a district involved in providing health

services at various levels of intervention, not only state providers, but also church, community and private providers. A well-functioning DHS includes network of health facilities, offering essential health interventions, district hospitals that receive referrals from health centres and a District Health Management Team (2). Health systems at the district level carry out four vital functions of stewardship, health financing, generating human and physical resources and provision of health services (3). Improving the performance of district health systems is critical to the delivery of essential health interventions and a prerequisite for the attainment of the Millennium Development Goals (3-9).

So far, the status of health systems in the African region remains too weak to support the delivery of essential health interventions in spite of the adoption of various strategies and resolutions (10). The fifty-sixth WHO Regional Committee for Africa requested for WHO's technical guidance and support for implementing essential health interventions aimed at revitalising district health services (11). In response to this request, a rapid assessment of the functional status DHS was undertaken by the WHO Regional Office for Africa. The specific objective of the assessment was to assess the adequacy of human resources, health financing, health infrastructure, health services management, availability and accessibility of health services at the district level.

## MATERIALS AND METHODS

The primary source of data for each report was from a cross-sectional descriptive survey for the period 2007 using the WHO questionnaire (annex 1). The secondary sources of data were the health information system including various national and sub-national health sector reports. In summary, the questionnaire reviews a number of parameters related to the level of inputs (human resources, health financing, and infrastructure); management of health systems; availability of services in the public and private-not-for-profit sectors; access to services in the public and private-not-for-profit sector (table 1). The questionnaire was administered by a local consultant in each country. The study took place in six out of 19 English speaking countries of the WHO African region. These countries are Ghana, Liberia, Namibia, Nigeria, Sierra Leone and Uganda.

There was a variation in the size of the sample for each of the six countries. In both Liberia and Sierra Leone all the districts were selected. In Nigeria, the 156/774 local government areas were randomly selected. In the other three countries, the selection was purposive and did not include all the districts; Ghana – 20/138; Namibia – 9/13 regions; Uganda – 12/82. The purposive selection criteria included rural/urban location; location of facilities being studied; presence of the type of facility being studied; level of performance.

For each country, the entire survey report was reviewed by a consultant, focusing on availability of primary and secondary data presented for given assessment parameters. Indicators were calculated where information was complete and the results tabulated according to the following areas – human resources; health financing; health infrastructure; health systems management; health services availability; and access to health services.

Suggested actions for improving and/or validating results for given indicators was provided for each country. Also, health system constraints were identified and others suggested for review and verification. General comments were made for the improvement of each country report. Revised reports were received from Ghana, Namibia, Nigeria and Uganda. Not all suggested actions for improving country reports were adopted. Therefore information from individual country reports remains incomplete for some of the variables assessed.

## RESULTS

*Availability of human resources:* All countries reporting on these parameters indicated that they did not meet the policy requirements for human resources at any of the levels of care. Nigeria has an extremely low proportion of the required human resources in the specialised facilities that were sampled (0.09%); it also has the lowest proportion of doctors and midwives per 100,000 inhabitants. About half of the facilities in Ghana and Namibia have the required human resources, with specialised facilities and district hospitals being in a slightly better position than lower level facilities. Table 2 summarises the quantitative data for availability of human resources at district level.

Ghana has the highest average of doctors per capita but there is a wide range of 0.69-25 per

**Table 1***Parameters for assessing the different aspects of district health systems performance*

Health systems component	Parameter assessed
Adequacy of human resources at the district level	Proportion of facilities with the required human resources. Number of doctors per capita. Numbers of midwives per 1000 pregnant mothers.
Health financing	Ease of flow of resources. Per capita expenditure or allocation at district level. Expenditure patterns.
Adequacy of health infrastructure at district level	Proportion of facilities with adequate building infrastructure. Proportion of facilities with electricity or other source of reliable energy. Percentage of districts with access to safe water. Percentage of facilities with adequate communication infrastructure. Proportion of facilities with adequate basic medical infrastructure. Proportion of facilities with adequate transport.
Health services management	How well are district health management teams (DHMT) are supported in terms of: <ul style="list-style-type: none"> <li>• human resources</li> <li>• other logistics</li> </ul> How well are basic management tasks fulfilled?
Availability of health services	Proportion of the population within a 5km radius. Percentage of facilities with no stock - outs of medicine. Proportion of facilities offering the defined minimum package for the health care level. Proportion of facilities with a functional cold chain for vaccines. Availability of intermittent preventive therapy in pregnancy (IPTp) services. Use of integrated management of childhood illnesses (IMCI) strategy. Provision of Human Immunodeficiency Virus (HIV) screening and anti - retrovirals (ARVs). Availability of artemisine based combination therapy (ACTs). Provision of insecticide treated nets (ITNs). Provision of obstetric services. Provision of directly observed therapy (DOTs) for tuberculosis (TB). Collaboration by health facilities with traditional birth attendants (TBAs) and community health workers (CHWs).
Access to health services	Consultations per capita. Antenatal care coverage (ANC). Proportion of births by health personnel at a health facility. Proportion of births by Caesarian Section (CS). District family planning (FP) coverage. Measles coverage. 3rd dose of diphtheria, pertussis and tetanus (DPT3) coverage.

For each country, results are based on either documented standards or the opinions of health workers who were interviewed during the individual country surveys.

**Annex 1***Rapid assessment health district final*

Country						
Year						
1 Presentation: district definition						
Name of region or province	District name	Health Mapper code or District number	District Population	District area	Urban/Rural	Number of health areas

100,000 inhabitants. Uganda with a lower value for doctors per 100,000 also has a wide range, reflecting the inter-district disparities for the distribution of doctors. Namibia on the other hand with 5.7 doctors per 100,000 has at least one doctor in each of the districts that were sampled. The highest number of 2.7 midwives per 1000 pregnant women was reported in both Ghana and Uganda. In Namibia the average number of midwives per 1000 is 1.62 with a higher vacancy rate experienced at lower level facilities.

Low human resources were reported to place a high work-load on available staff, probably compromising

service volume and quality. Some of the constraints related to the inadequate human resources are:

- (i) Inadequate production – Namibia does not have its own medical school for doctors and relies heavily on expatriate staff. The vacancy rate for this position is high, going up to 78% in one district.
- (ii) Inequitable training opportunities – in Nigeria there are inequitable training opportunities in favour of the south, subsequently leading to inequitable employment opportunities.
- (iii) Unfavourable employment terms – some areas fail to attract personal such as districts with low

**Table 2***Summary of human resources for health*

Country	Proportion of facilities with required human resources	Number of doctors per 100,000	Mid-wives per 1000 pregnant women
Ghana	Specialised – 47% district hospitals – 43%	13 (0.69 – 25)	2.7
Liberia	No data	1.2/3.9	No data
Namibia	District hospitals – 55.6% health centres – 44.4%	6.8 (vacancy rate 25-78%)	1.62
Nigeria	Specialised facilities alone 0.09%	0.78	0.78
Sierra Leone	No data	No data	No data
Uganda	No data	3.3 (0.2-8)	2.7

social infrastructure in Ghana; preference for personnel to work in home areas in Nigeria.

- (iv) Emigration of health workers to more developed countries as reported in Ghana.

Some of the reported good practices for addressing the human resource deficit are related to training support and retentions schemes. There have been deliberate efforts to support training of different cadres in both Namibia and Ghana. In Namibia, the long term human resource development plan has ambitious targets through providing loans and other forms of sponsorship to undertake training at home and abroad for suitably qualified applicants. There is a plan to introduce bonding of staff for at least a year after qualifying. In Ghana some of the local district assemblies have sponsored some students in various health training institutions to improve staffing in the districts.

*Financing of district health services:* Information on financing of DHS was reported for only Ghana, Namibia and Uganda. The source of funding to the DHS is mainly through centrally pooled resources from the various partners and government revenue. In Ghana and Namibia, additional funding at district level is from out of pocket expenditure. Also, development partners provide direct support to deprived districts for the purpose of scaling up service delivery. In Ghana, the disbursement of central government funds is linked to performance targets and is through various financial control steps, which is thought to render the process cumbersome. The other two countries did not report on ease of flow of financing between the central and district levels.

The reported per capita allocation to health at district level varies greatly within and between countries. Uganda reports the lowest at US\$ 3.12 per capita. Ghana reports a per capita allocation of US\$ 32 per capita whilst that of Namibia ranges from US\$ 7.80 – US\$108.6. In both Ghana and Uganda, the total per capita allocation/expenditure on health does not reflect the totality of funding at district level. In Uganda the figure probably reflects funding directly controlled by the district level.

Information on expenditure patterns at the district level is only provided in the Namibia report. Up to 70% of resources are spent on staff related costs; 1-17% on re-stocking of essential medicines and up to 9-24% on other recurrent costs the bulk of which is spent on traveling expenses, leaving very little for

other recurrent expenditure such as maintenance and repairs in most districts. This expenditure pattern has a negative effect on the repair and maintenance of buildings, equipment and vehicles.

*Health infrastructure at the district level:* Namibia presents the most favourable status for health infrastructure: six out of nine sampled districts in Namibia have all hospitals and clinics with adequate building infrastructure; seven out of nine districts have all health centres facilities with adequate building infrastructure. Namibia is also better resourced for the level of utilities although lower level facilities are more disadvantaged. All hospitals; health centres in six out of nine districts and all clinics in four out of nine districts were reported to have electricity. It is only in Namibia where all hospitals and health centres in all sampled districts had access to safe water. However at lower level facilities (clinics) only 4/24 have reliable a safe water source. All district hospitals; all health centres in six out of nine districts and all health clinics in five out of nine districts in sample had adequate communication facilities. All hospitals, health centres in two out of nine districts and clinics in one out of nine districts are reported to have ambulances. Facilities that lack ambulances in Namibia improvise by using pick-up trucks with mattresses at the back also locally known as 'bakkies' to transport patients.

However, the expanding volume of services in Namibia is increasingly leading to inadequate space and overcrowded services in some centres. Although basic equipment and supplies required for the effective functioning of units is present in all hospitals and 89% in all health centres, there are gaps which undermine service quality. Some of the equipment is either broken down or obsolete. In Namibia, each district has at least one general purpose vehicle. However, some of the vehicles are very old and transport is mentioned as a serious constraint for service delivery particularly in large districts with limited facilities where outreach services are needed. In some districts outreach services that are essential to reach remote populations have almost ground to a halt. Poor transport logistics also constrains the distribution of medicine and essential supplies to health facilities; and supervision visits. Currently there is no replacement plan for old vehicles and the resources for regular maintenance is limited if any at all. Table 3 summarises the available quantitative data for utilities in the different countries.

**Table 3**  
*Availability of utilities in different countries*

Country	Availability of electricity / other reliable energy source	Proportion of facilities with reliable access to safe water supply (%)	Facilities with adequate communication infrastructure (national standards) in percentage
Ghana	No quantitative data	30	40%
Liberia	54.2	47.1	No data
Namibia	Hospitals – 100%; HC – 100% in 6/9 districts, 50% in 1/9 and 0% in 2/9 districts; Clinics – 100% in 4/9 districts, 75-92% in 4/9 & 42% in 1/9 districts	100 (hospitals and health centres only)	All hospitals – 100%; HC -6/9 100%, 33% in 1/9 and none in 2/9; clinics – 100% in 5/9 districts, 83% in 2/9, 25 -33% in 2/9
Nigeria	36.2	24.4	Radio communication -34.9; Fixed lines – 0.7; GSM – 0.3; internet – 0.1
Sierra Leone	No data	No data	14.3
Uganda	46% (hospitals) 4% (lower level facilities)	20.9	No data

In Ghana, 57% of all district hospitals sampled are reported to have adequate buildings. All district hospitals and specialised facilities are connected to the main power grid as well as having stand-by generators. Lower level facilities in rural Ghana were most disadvantaged in this respect, depending more on unreliable sources such as generators and solar/gas lamps. All facilities in Ghana were reported to have access to safe water sources but the reliability of supply varied throughout the year. District hospitals were reported to have the more reliable source of water as compared to lower level facilities. Ghana has 40% of hospitals reporting adequate communication facilities. The situation was worse at lower level facilities. In Ghana, 67% of district hospitals had the required equipment for their operation compared to 53% for specialised/referral facilities. About half of the health facilities were reported to have the needed equipment with this proportion being lowest at first contact facilities. Many of the facilities in the deprived districts lacked specialised equipment such as ultrasound scans and X-ray machines. In Ghana, up to 71% of hospitals are reported to have ambulances.

Liberia reported the lowest adequacy of infrastructure with only 12.4% of sampled units

having adequate infrastructure. About half of facilities in Liberia are reported to have electricity and a reliable safe water source.

Nigeria and Uganda have comparable findings for some of the utilities. About 30% of facilities in both countries have a reliable source of electricity. Both countries also report the lowest access to a reliable safe water source for all health facilities. In Uganda, only 4% of the lowest level of care has any source of reliable energy as compared to 46% at the higher level care facilities.

In Nigeria 34.9% of facilities are connected to radio communication and less than 1% has alternative communication such as fixed land lines or internet. In Uganda, only 15% of facilities have either radio communication or fixed land lines. Only 14.3% of facilities in Liberia are reported to have adequate communication facilities.

In Uganda up to 72% of facilities are reported to have at least one general purpose vehicle. In Nigeria, only 1.3% of facilities are reported to have general purpose vehicles. In Nigeria only 2.5% of facilities are reported to have ambulances. Almost half of the hospitals in Uganda and Liberia are reported to have ambulances for patient transport.

*District Health Services' Management:* All countries apart from Sierra Leone reported on the selected aspects of health services management. There is a varied level of reporting within each country report and not all aspects are reported on.

In Nigeria almost all districts (96.4%) have the complete number of members for each team. In Ghana, most district health management teams have the full component of members. In addition, it was reported that the heads of all DHMTs in Ghana have the minimum required qualifications based on national norms and standards. In Uganda, less than half (42%) of the districts filled the required quota for district health team members. Namibia does not report on completeness of district health teams but notes that capacity building for staff of the DHMTs is carried out on an ongoing basis through in-service training and formal qualifications training by distance mode, sponsored by Ministry of Health and Social Services, international development partners and other stakeholders.

In Namibia, all DHMTs have office space for all DHMT whereas this is lower in Nigeria (78.3%) and Uganda (50%). Not all DHMTs have access to meeting rooms – Nigeria (86.4%), Namibia (77.8%) and Uganda (58%). In Ghana about 25% of DHMTs do not have a meeting room and an almost equal proportion lack accommodation for the team.

Infrastructure for communication is not in place for most DHMTs in Ghana, with most managers relying on use of personal mobile phones. In Namibia, communication for the DHMTs is hampered by constraints such as - all districts have computers but not linked to size of DHMTs, and in many instances as many as 50% not functioning properly; few functional printers and in some places no provision for replenishment of toner; and lack of technicians to service the equipment.

All districts in Uganda and Namibia reportedly had Health Management Information System (HMIS)/disease notification records. In Namibia, the computerised HMIS allows for easy retrieval and analysis of data. In Ghana, 90% of DHMTs had HMIS/disease notification records. Lack of staff to manage health information constrained the quality of reporting and data retrieval in Ghana. In Liberia (84.2%), Nigeria (76.5%) and Sierra Leone (64.3%) the proportion of DHMT with these records is much lower.

All districts in Ghana and 69.5% of facilities reported presence of income and expenditure

records for 2006. The presence of service plans follows the same pattern as availability of HMIS records. All sampled facilities in Ghana, Namibia and Uganda had service plans for 2006. The work-plans in Namibia were noted to be of a good quality covering a range of broad issues and stating goals and objectives of regional management teams. Fewer facilities in Liberia (56.3%) and Nigeria (51.1%) reported presence of service plans for 2006. Level of implementation of work-plans was assessed in only Liberia which showed that only half of the facilities had implemented the work-plan for 2006.

Different aspects for support supervision were assessed in each country. In Nigeria, only two states out of 12 conduct the required 12 visits annually to the lower level facilities. Three out of twelve are reported to make up to 11 visits annually. The other states have varying frequency of visits ranging from only one visit per annum to seven. Lack of resources at the district level is reported to be a constraint for those which fail to meet the minimum requirement. In Liberia almost half of the districts had supervision checklists (48.8%), supervision schedules (52.4%); past supervision reports (53.3%); and provided feed-back (46.4%) to the facilities visited. In Ghana the DHMT makes an average of 11 supervisory / monitoring visits annually to the sub-district level. In Namibia, support supervision visits and monitoring take the form of bi-annual integrated visits by specialist programme support officers, quarterly advisory committee meetings and ad hoc house-keeping visits. In Uganda all DHMT were able to conduct the quarterly support supervision visits to lower level units.

In Ghana, most of the teams have at least one functional vehicle. In Uganda 66.7% of DHMT were reported to have at least one vehicle for support supervision. In Namibia, transport for the DHMT is reported to be insufficient and compromises the capacity of the teams to undertake support supervision visits to lower levels.

*Availability of health services:* Nigeria (89%) has the highest proportion of the population within a 5km radius of static services. In Ghana the proportion of the population within a 5km radius ranges from 10 – 80%. In Namibia this is low at only 32.6%. In contrast, all hospitals and 95.9% of health clinics in Namibia offer the defined minimum package of health services as compared to only 16.4% of facilities in Nigeria; 86% of all health facilities and 71% of hospitals in Ghana.

Uganda reports on the proportion of facilities offering the minimum health care package and this is only 39.3%. Table 4 provides a summary for the availability of health services. It illustrates that the individual components of the minimum package are less likely to be offered at lower level facilities. It also illustrates that availability of the different components of the minimum package is inconsistent within countries and that there is a wide range in availability of services across geographical areas within a country.

*Utilisation of health services:* The consultation rate per capita follows the same trend as that for doctors per 100,000 persons. Namibia reported the highest per

capita consultation at 3.03, followed by Uganda at 1.05 (0.7 – 1.6) consultations per capita and Ghana which had the lowest per capita consultations in 2006 at only 0.41 per capita (0.16 – 1.12). In Ghana, some of the districts with the highest density of health facilities had both the highest and lowest consultation rates per capita. Financial barriers to attend consultations were identified even in Namibia where exemptions to payment were in place. Table 5 summarises the level of utilisation of services.

There is variation in the pattern of the selected parameters for service availability and coverage in reproductive health apart from Namibia (ANC coverage – 68%; proportion of births by health

**Table 4**  
*Availability of health services in the different countries*

Item	Ghana	Namibia	Nigeria	Sierra Leone	Uganda
% of population in 5km access of health facility	10-80%	32.6	89%	No data	No data
% of facilities providing defined minimum package	No data	Hospital -100 Health clinics – 95.9	16.4	No data	No data
Availability of IPT services at hospital, health centres, 1st contact facilities	Hospital 100 % HC 79% 1st contact 58%	Hospital -100	47.2	No data	Hospital -95.5; HCIII&IV 48.6; HC II 0.33
% of facilities providing HIV screening	11%	Hospital -100	4.6	2-15	Hospital 100; HC III&IV 97.9; HC II 36.1
Provision of ARVs at hospital, health centres, 1st contact facilities	Hospital 38% HC 1% 1st contact 0%	Hospital -100	1.4	5-45	Hospital 86.4; HCIII & IV -7.8; HC II -0
Availability of IMCI <sup>3</sup> services at hospital, health centres, 1st contact facilities	Hospital 100% HC 84% 1st contact 62%	55.6 (covered in IMCI roll out)	63.5	0	Hospital 86.4; HCIII & IV -85.3; HC II 57.9
Provision of ACTs at hospital, health centres, 1st contact facilities	Hospital 100% HC 77% 1st contact 54% Average – 61%	100% in malaria prone zones	62.3	No data	90.2
% of facilities providing comprehensive obstetric care	District hospitals – 67%	No data	14.14	No data	Hospital 95.5; HC IV 32; HC III 75
% of facilities with capacity to distribute ITNs	74	No data	63	No data	Hospital 59; HCIII & IV -0.81; HCII -0



% of facilities offering DOTs	Average - 45% District hospitals - 100; HC - 58%; 1st contact - 38 (In Northern region only 3-8% of facilities)	Hospital 100	No data	2-75	Hospital 81.8; HCIII&IV 72.7; HC II -10.2
% of facilities reporting no stock outs	Average 88 Lower level 41	100 (for 8/9 districts)	71.2	100	84 (30 -100)
Presence of functional cold chain <sup>4</sup>	Hospitals 80% Health centres 30% 10 contact centres 26%	100%	79.9%		Hospitals & higher level facilities 100% Lower level facilities 49%

<sup>2</sup> There were no reports from Liberia and Sierra Leone on availability of health services

<sup>3</sup> Instituting use of IMCI was associated with high costs for training staff in Ghana. Not using IMCI practices is also related to lack of training of staff at the lower level facilities, non-compliance by many private facilities and the fact that some facilities do not provide maternal and child health services.

<sup>4</sup> Many of the systems in Ghana are reported to have broken down, lacked reliable electricity or were obsolete. Those facilities that lacked a functional cold chain then stored vaccines with the respective DHMTs and picked supplies as needed.

**Table 5**

*Utilisation of health service for the different countries*

Country	Consultations per capita, per annum	ANC coverage (%)	% births by health personnel at health facility	% births by Caesarian section	District family planning coverage (%)	Measles coverage (%)	DPT3 coverage (%)
Ghana	0.41 (0.16 - 1.12)	96.4	45.5	6.75	31.4	64 - 145	74 - 100
Liberia	No data	No data	No data	No data	No data	No data	No data
Namibia	3.03	68	67.4	5.4	61.3	80.9	90.9
Nigeria	No data	40.2	34.6	2.1	24.3	81	52.8
Sierra Leone	No data	No data	No data	28% (highest value)	28% (highest value)	42-119	46-112
Uganda	0.7 - 1.6	50 - 145	20-60%	10 - 59	12 - 34	55-260	80 - 122

personnel at a health facility - 67%; family planning coverage -61.3%). Ghana reported the highest coverage for ANC at 96.4%, slightly less than half (45.5%) of these mothers are delivered by health personnel at a facility and about one third (31.4%) receive family planning. A similar trend

was observed in Uganda (ANC coverage - 85%; proportion of births by personnel at a health facility - 34.6%; family planning coverage -12-24%) and Nigeria (ANC coverage - 40.2%; proportion of births by personnel at a health facility - 30%; family planning coverage - 24.3%). In Ghana, the

low performance for some of the districts (17% and 28%) was attributed to barriers related to transport, socio - cultural, financial barriers on the user side and health system gaps (e.g. poor staff attitudes, lack of privacy) on the provider side.

The level of births by Caesarian section is below the acceptable 15% in all countries. In Uganda where the upper range level is higher than 15%, this is attributed to frequent delays in seeking care leading to complications and the need for surgical intervention.

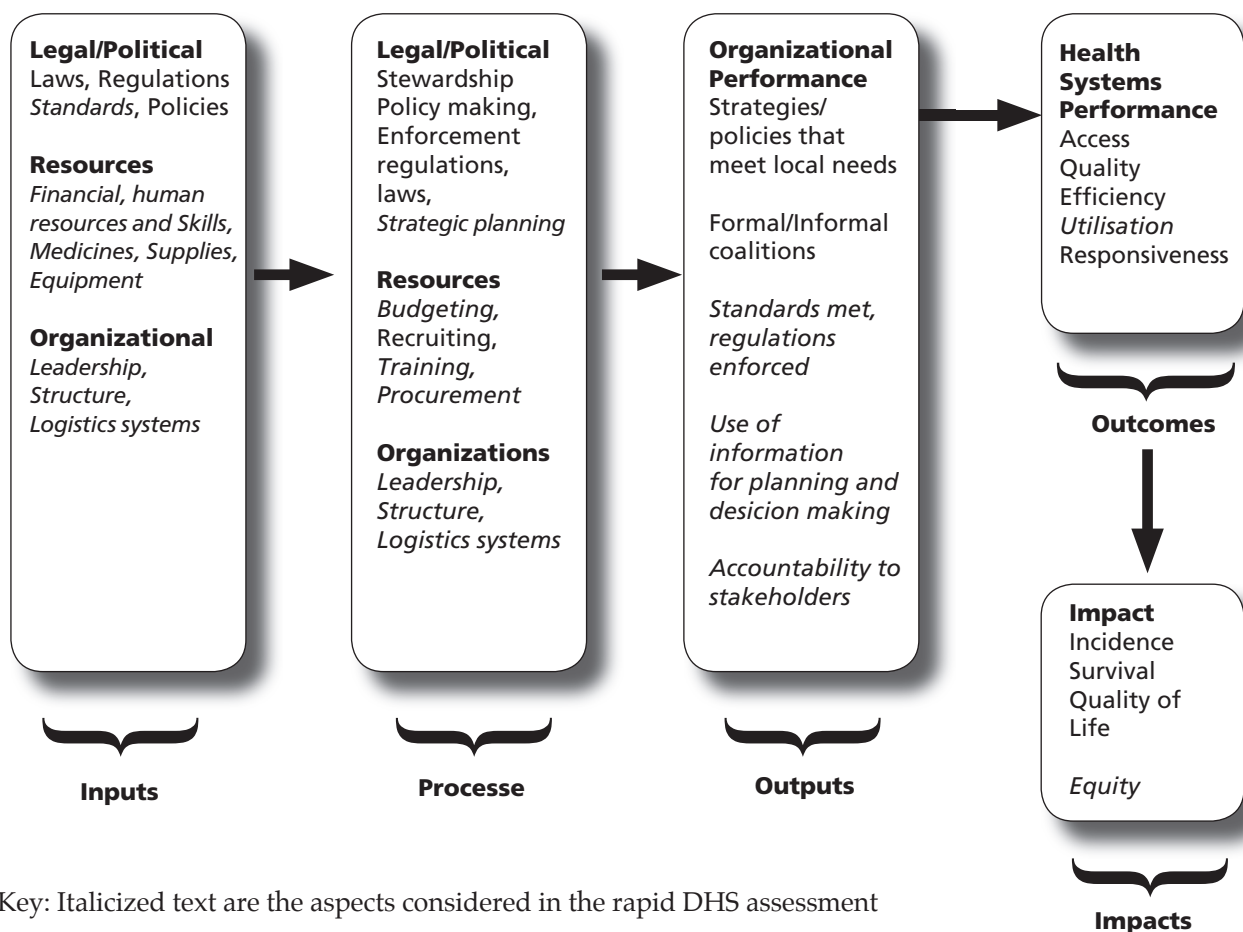
The best performance of coverage for both DPT3 and measles is in Namibia (91% and 81% respectively). Nigeria has a good coverage for measles (81%) but that for DPTs is low (52.8%). Ghana and Uganda have similar performance for both DPT3 and measles coverage. There is a wide range in performance of coverage for both antigens. Measles coverage in Uganda (55-260%), Sierra Leone (42-119%) and Ghana (64-145%) has a wide performance range. DPT3 coverage for Uganda was reported at 80-122%, Ghana at 74-100%, Sierra Leone 46-112%.

## DISCUSSION

This paper reviews the adequacy of inputs and processes at district level to support outputs and outcomes of service delivery at district level using a rapid assessment. The outputs considered in this case are those considered essential for the attainment of the MDGs. Whilst providing a large amount of information in a reasonably short period, the draw backs of a rapid assessment in this particular review seem to be the variability in quality and completeness of reporting on the selected parameters. It is therefore important to note that any inferences made so far are cautious given the variability in quality and completeness of the data from the countries in the sample.

This paper does illustrate that according to country norms and standards, the inputs and processes are insufficient to lead to acceptable outputs and outcomes. An important point to note is that comparability across countries is made on

**Figure 1:** Analysis framework for the inputs, processes, outputs and outcomes considered in the rapid District Health Assessment



Key: Italicized text are the aspects considered in the rapid DHS assessment

Adapted from Partners for Health Reformplus (12); Hornby *et al.*

the basis of their individual country norms and standards, regardless of what those are. Implicit in this assessment is that country norms and standards are reasonable given the available resources and that are appropriate for the attainment of the MDGs.

Analysis of the information from the individual country reports is based on a framework that relates inputs, processes, outputs and outcomes. (See figure 1). An assumption is made that adequate inputs and appropriate processes result into desirable outputs and outcomes. In this framework, the inputs considered include – health financing; human resources; health infrastructure. The processes considered are related to performance of the district health management team in selected aspects. The outputs considered are the availability of selected health services pertinent to the attainment of MDGs for improved nutrition; reduced maternal and child mortality (9). The outcomes considered are access to and quality of health services as well as utilisation rates. An acceptable level of outputs and outcomes therefore depends on sufficient inputs and processes.

In this paper, 'sufficient' is judged by the norms and standards that countries have set for inputs and processes. The acceptable level of output and outcomes is judged on regionally agreed goals and standards. Data analysis attempted to compare results across countries and to point out apparent inconsistencies of results across countries

According to country norms and standards, the inputs and processes are insufficient to lead to acceptable outputs and outcomes, including the MDGs.

In general, the level of inputs for all countries is inadequate. Compared to the US \$ 30-40 per capita per year that the Commission for Macroeconomics and Health (14, 15) recommends to support a minimum basic package of needed services, Ghana and Uganda fall short of the mark. Although Namibia has the better level of inputs it has a wide range in the per capita budgetary allocation which probably introduces equity concerns e.g. inadequate transport for outreaches in large districts was noted to contribute to low performance of immunisation services. There are similar disparities noted in Ghana where the second five year health sector plan is designed to reduce the rural/urban inequalities in service provision and yet many of the facilities in the deprived districts still lack personnel and

the appropriate equipment needed to provide specialised services such as scans and X-rays. None of the countries reporting on availability of human resources meet the expected quota for national norms and standards. Certainly the levels reported fall short of 2.5 health professionals (including only doctors, nurses and midwives) per 1000 population below which it is unlikely that the health care needs of a nation are appropriately met (16,17).

The processes considered in this paper seem to comply with expected individual country norms and standards. Most DHMT have the full complement of staff, have relevant HMIS and work-plans to guide decision making. This is commendable however, the supportive infrastructures for the DHMT are lacking in most countries and this is most probably related to a generally low funding per capita in the health sector.

All countries offer the range of services that are needed to contribute to the attainment of the Millennium Development Goal (MDGs) (18). In spite of the relatively low level of inputs, most countries manage to offer most of these services at all levels of care, albeit with debatable levels of quality and equity. Some of the outstanding examples include: Namibia manages to have no stock outs of essential medicines in eight to nine districts even in light of the inequitable per capita expenditure; both Namibia and Uganda offer HIV screening at all hospitals in the sample; all hospitals in Ghana and those in malarious zones in Namibia had ACT available to treat malaria. The general trend however is that provision of the selected basic services seems to be better supported at the higher levels of care. This is a matter of concern if lower level facilities are in areas which are accessed by the majority of the population. There is also a tendency to have wide variations in the performance of service delivery geographically as well as at the different levels of the health systems.

There is also inconsistency in the performance of some of the selected parameters for service availability and coverage. Nigeria for instance has the highest proportion of the population within a 5km radius of static services and yet has the lowest facilities offering a defined minimum package of services. Namibia on the other hand has the lowest proportion of population within a 5 km radius and yet offers the defined minimum package of services at almost all facilities. Perhaps not surprisingly,

Namibia has the highest and most consistent availability and utilisation of reproductive health services as compared to Nigeria which has one of the lowest.

In conclusion, in spite of the relatively low level of inputs, most countries manage to offer the essential health services at all levels of care, albeit with debatable levels of quality and equity. The general trend is that provision of the essential health services is more at the higher levels of care prompting concerns for the populations served at lower levels of care. There is also a tendency to have wide variations in the performance of service delivery geographically as well as at the different levels of care. There is need for replicating these kind of assessments among all health districts in the African Region with a view to designing appropriate interventions for improving functionality of district health systems. In addition, it would be worthwhile to undertake further research to explore the impact of focusing on improving the quality of existing services while increasing quantity of service delivery points to achieve higher coverage of essential health services.

### ACKNOWLEDGEMENTS

To the national consultants who were responsible for data collection and then compiling individual country reports. In addition, the authors greatly appreciate the role of the focal persons for health systems in the six WHO country offices. These focal persons are Mr Selassi Amah d'Almeida (Ghana), Dr Eric Johnson (Liberia), Dr Tuoyo Okorosobo (Namibia), Dr Amos Petu (Nigeria), Mr Ade T. Renner (Sierra Leone), and Dr Juliet Bataringaya and Dr Juliet Nabyonga (Uganda) in directing the process of data collection and report compilation.

### REFERENCES

- Gorgen H., Kirsch-Woik T. and Schmidt-Ehry B. The district health system: experiences and prospects in Africa. Eschborn: GTZ; 2004.
- Disease control priorities project. The critical role of district hospitals. Geneva: DSPP; April 2007. [www.dcp2.org](http://www.dcp2.org).
- The World Health Report (WHO) 2000 – Health systems: improving performance. Geneva: World Health Organization; 2000.
- WHO. Strategic orientations for WHO action in the African Region. 2005-2009.
- WHO. The African regional health report: The health of the people, Geneva, WHO, 2006.
- Ministerial Summit on Health Research. The Mexico Statement on Health Research. Knowledge for better health: strengthening health systems. Mexico City, 20 November 2004; 1-6.
- WHO. World Report on knowledge for better health – Strengthening health systems. Geneva: World Health Organization; 2004.
- de Savigny D., Kasale H., Mbuya C. and Graham R. G. Fixing health systems. Ottawa. *The Int. Dev. Res. Centre*; 2008: 150.
- Disease control project. Achieving the Millennium Development Goals for health: So far, progress is mixed – can we reach our targets, Geneva: DSPP; February 2007. [www.dcp2.org](http://www.dcp2.org).
- Kirigia J.M. and Barry S.P. Health challenges in Africa and the way forward. *Int. Arch. Med.* 2008, **1**: 27 doi:10.1186/1755-7682-1-27. This article is available from: <http://www.intarchmed.com/content/1/1/27>.
- WHO/AFRO. Revitalizing health services using the Primary Health Care approach in the African Region. Resolution AFR/RC56/R6. Brazzaville: WHO/AFRO.
- Partners for Health Reformplus (PHR). Improving Health System Performance through Monitoring and Evaluation. Bethesda, MD: Partners for Health Reformplus Project, Abt Associates Inc; 2006.
- Hornby P. and Perera, A. Development framework for promoting evidence-based policy action: drawing on experiences in Sri Lanka. *Int. J. Health Plann. Mng.* 2002; **17(2)**: 165-183.
- Travis P., Bennett S., Haines A., et al. Overcoming health systems constraints to achieve the Millennium Development Goals. *Lancet.* 2004; **364(9437)**: 900-906.
- WHO, Macroeconomics and health: Investing in health for economic development. Geneva: World Health Organization, 2001.
- WHO. Global atlas of the health workforce. Geneva: World Health Organization, 2007
- WHO. World Health Organization report 2006: working together for health. Geneva: World Health Organization, 2007.
- Cavagnero E., Daelmans B., Gupta N., et al. Assessment of the health system and policy environment as a critical complement to tracking intervention coverage for maternal, newborn, and child health. *Lancet.* 2008; **371**: 1284-1293.