HEALTH SYSTEM METRICS

Tanzania Case Studies of Current Practices

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1.0 Introduction

Tanzania Health Policy places a great emphasis on Health Information System (HIS), because of its key role on monitoring and evaluation of health sector performance in Tanzania. The government of Tanzania through the Ministry of Health and Social Welfare (MoHSW), has an obligation of implementing local and international commitments which aims at improving the health status of Tanzanians. Some of the commitments are: -

- Development Vision 2025
- National Strategy for Economic Growth & Reduction of Poverty (NSGRP-MKUKUTA)
- Health sector strategic plan 2003-2008 and expected 2009 – 2014
- Health Sector Reforms
- Ruling Party Election Manifesto (2005)
- RCH/IMCI strategies
- HIV/AIDS, Malaria and TB intervention initiatives
- Millennium Development goals etc

The commitments need to be closely monitored, and systematically be evaluated from time to time. It is from this view; the government considers Monitoring and Evaluation (M & E), as one of the most important instruments for measuring the inputs, process, outcomes and impact according to commitment objectives. Importantly, the shift to budget support by development partners, again this has made the role of M & E in health sector becomes even more important.

The purpose of the M & E, is to promote accountability and learning in the health sector; and to guide stakeholders in making strategic choices and decisions as to how best to support and work with the MoHSW in improving the health sector performance for the benefit of all Tanzanians. The function of the policy is to keep together both public and all stakeholders involved in health sector operations at all levels. The M & E framework operates in line with lay down   principles and standards aimed at ensuring credibility, impartiality, transparent and usefulness of M & E process. In this matter, a very strong and well coordinated HIS to support M & E mechanism is required. The primary aim of this paper is to shade a light on the process of strengthening Health Information System in Tanzania. It analyses what is on the ground in relation to the six building blocks of Health Information Systems in the country. Thus, it gives an overview of Health Information System in Tanzania, government efforts to improve HIS, Health Matrix Network initiatives to improve HIS in Tanzania, Source of data and indicators for six building blocks and finally priorities and way forward as regard to HIS.

2.0   An Overview of Health Information and source of data in Tanzania

Health Information System (HIS) in Tanzania is made-up of different systems, which provide health related information. The information is used to monitor and evaluate the health delivery systems in the country as well as government's commitments. The management and co-ordination of these systems, are some how complex. Basically, it is due to the fact that the management of systems is under different ministries, departments' agencies and research institutions. The MoHSW alone has several subsystems which are supervised under different departments. For example M & E for National AIDS/HIV Control Programme (NACP) and TB & Leprosy and others, reports to the Directorate of Preventive Services; Health Management Information Systems reports to Directorate of Policy and Planning; Human Resource Information System report to Directorate of Homan Resource Development etc.   Systems which are managed outside MoHSW and provide useful health data are Demographic and Health Surveys, House Hold Survey, Population Census and housing. These are coordinated by the National Bureau of Statistics (NBS) in close collaboration with MoHSW through Health Information and Research Section. Vital registration is administered through the Ministry of Justice and Constitution Affairs.

Health Information Data Sources

The main classification of data sources includes Population Censuses, Vital Registration, household and facility based surveys, Disease surveillances, service records and Administrative records.

Population Censuses

For many years population census has been a major source of health information in Tanzania. This is mainly because of the weakness of vital registration system in the country. The national censuses provide population size, mortality levels and differentials, fertility and social economic characteristics. Data from census provide denominators which are used to estimate different indicators of health interventions like immunizations, reproductive health, Integrated Management for Child Illness and etc. The national Bureau of Statistics is responsible for the census in Tanzania mainland. Post independence censuses were in year 1967, 1978 and 1988. In theory the population and housing census is done periodically after every ten years although the 2002 census had 14 years interval with the previous one.

Demographic Surveillance System (DSS)

The National Sentinel Surveillance System (NSSS) is a unit within the Ministry of Health & Social welfare (MoH& SW), under Health Information and Research Section. Demographic Surveillance System is a community based program of the Ministry of Health that contributes essential information for the improvement of health services. It consists of the continuous and complete enumeration of all demographic events (births, deaths, and migrations) in a geographically defined population cluster. The DSS provides community-based information on population health, Tanzania's burden of premature death, and health service use before death. These data complements data from other systems and programs, such as the health facility-based Health Management Information System (HMIS) vital registration and population censuses. There are 9 DSS sites in different parts of the country namely Hai, Igunga, Morogoro, Kigoma, Ifakara, Dar es Salaam, Mwanza Magu and Rufiji . Five out of nine sites are up and running to date whereas the other four (Hai, Igunga, Morogoro,and Dar es salaam) semi-active due to financial constraints. Out of nine sites, six are directly supervised by MoHSW, two by Ifakara Health Research Development Centre (IHRDC) and one is owned and supervised by National Institute for Medical Research (NIMR).

Vital Registration System (VRS)

Registration of vital events in Tanzania Mainland is governed by the registration act of 2002. The office responsible is the Registration, Insolvency and Trusteeship Agency (RITA). Registration Insolvency and Trusteeship Agency, is an executive agency, answerable to the ministry of Justice and Constitutional affairs. The agency was created from the former administrator's general department in response to demand for a better regulation unit for registration of vital events in the country and was launched in 2006. Despite the fact that registration is compulsory and it is supposed to covers most part of the country, unfortunately, the data from this system is still far away to be complete. However, currently there are efforts on ground to ensure that birth, deaths and marriage/divorce registration system is operational. Places where the system does not exist would be initiated and where it exists but it is still weak, would be strengthen.

Village registration system
In each village there is a registration system which requires each individual in the village to register. It contains information about all the people in the village and is updated as events of births or deaths occur. There are interventions to follow up and ensure that registers are adequately filed in and updated. The hamlet chairperson is responsible for updating the registers with support from the village executive officer and village health worker. In actual practice however, according to RITA, village registers are so far not well updated followed by extremely low returns to higher levels of the system when they are properly updated.

Household Surveys
All surveys of this type are operating under the Master Plan of Monitoring and Evaluation of Poverty Reduction Strategy. This component is supervised by the Technical Working Group of Census and Surveys (TWGCS) chaired by the National Bureau of Statistics (NBS). Members for TWGCS are from different ministries, departments; agencies research institutions, parastatals and development partners. The role of the TWGCS is to develop a calendar of surveys, to plan and provide technical and financial support. So far this group has designed a survey programme covering work until 2012. Most of household surveys are executed by the NBS in collaboration with different stakeholders including MoHSW. Technical assistance normally is provided through the MEASURE DHS programme, a project sponsored by the United States Agency for International Development (USAID).Assistance is on collection, analysis and dissemination of population and health data. Financial support is provided by the government of Tanzania and Development Partners.

Household budget survey

This survey is executed by the National Bureau of Statistics. The design of household budget survey follows the monitoring and evaluation framework of National Poverty Eradication strategy and Tanzania Development Vision 2025 including health, consumption and income; and Millennium Development Goals. Tanzania conducted its first HBS in 1991/92 and 2006. This survey provided baseline information for future comparison. Among information which is gathered includes household expenditures including expenditures of health.

Tanzania Demographic and Health Survey

Tanzania Demographic and Health Survey (TDHS) involve all areas of the country through sampling frame. The survey is part of a worldwide undertaking that aims at assessing the changing of demographic and health situation. This effort has, for some time, been coordinated and continues to be coordinated by the Demographic and Health Surveys programme of Macro International Inc of Columbia, Maryland, USA. In Tanzania this survey is done by NBS in collaboration with the Ministry of Health and Social Welfare. The 2004/05 is the latest in a series of periodic surveys to measure levels, patterns, and trends in demographic and health indicators, the first having been the one for 1991/92. The last survey was very much funded by the government through Master Plan of Monitoring and Evaluation of poverty reduction strategy.

Tanzania HIV/AIDS Survey

Tanzania HIV/AIDs Indicator Survey (THIS) was conducted last in 2003/04. The survey was initiated by the Tanzania Commission for AIDS (TACAIDS) with the purpose of getting national baseline data. The THIS was the first household survey of its kind to be conducted in the country. The objective of the survey was: -

- To measure HIV prevalence among women and men of age 15 – 49;

- To assess levels and trends in knowledge about HIV/AIDS, attitudes towards those infected with the disease, and sexual behavior practices;

- To collect information on the proportion of adults who are chronically sick, the extent of orphan hood, and care and support levels;

- To gauge the extent to which these indicators vary by characteristics of the individual such as age, sex, region, education, marital status and poverty status

The latest survey was conducted in 2007, and in this survey information additional information collected was on malaria. Like for HIV/AIDS prevalence of malaria in the country will be estimated.

Tanzania Disability Survey

In 2002 population census information on disability was collected but unfortunately the findings were not very encouraging. This is because the figure obtained was far away from what was expected. The question on disability covered all type of disabilities. Basing on census results the department of social welfare in the MoHSW requested NBS to design a separate survey for disability.

The National Bureau of Statistics (NBS) is in the final stages to conduct the 2007 Disability Survey. The structure will follow TDHS as it is technically supported by ORC macro. The survey is going to have three type of questionnaires. These are: -

- Detailed adult questionnaire for people with disabilities 15 years and above

- Detailed questionnaire for children with difficulties in functioning 0 – 14 years

- Household questionnaire with key sections as follows: -Identification; Household particulars; Economic activity; Difficulties because of health problems; and Housing and household facilities

Other information included in questionnaires are: -Background information; Core questions on functioning; Services needed and received ;Problems with services ;Family and Social integration and attitudes ;Accessibility of the environment; School attendance and employment ;Underlying health condition; and duration, onset and cause of health condition.

Disease Surveillance Systems

Under the MoHSW a number of disease surveillance systems are operated through special programmes. These includes: -

- Acute disease surveillance systems rapidly detect events, manage outbreaks, support a response an document outcomes. This is maintained under EPI programme.

- Chronic disease surveillance systems such as HIV/AIDS under NACP and TB & Leprosy programme provides accurate information on the disease prevalence trends either through special surveillance methods or special rounds or special efforts to collect high quality service data

- Integrated Disease Surveillance and Response (IDSR) strategy. The IDSR strategy links community, health facility, district, regional, and national levels with the overall objective of providing epidemiological evidence for use in making decisions and implementing public health interventions for the control and prevention of communicable diseases

Service Record System

Facility-based health records (often referred to as HMIS) produce sound locally relevant data that are used for the management of local health services. For a selected number of indicators, it produces data for national statistics on morbidity, causes of death, health service coverage and health infrastructure. This includes a national database of health facilities, human resources and key service availability. Such data are collected in a standardized and systematic manner that allows comparisons in between clinics, regions and over time.

Health Management Information System (HMIS)

The Health Management Information System (HMIS), is the biggest routine data system under the Ministry of Health and Social Welfare (MOHSW). It is so because it collects its information from more than 5,400 health facilities. The HMIS in its current form

was conceptualized in the early 1990s. The main aim was to establish a comprehensive and integrated routine data system using up to date technologies and approaches. This system was established as a key tool for monitoring and evaluation of health sector reform performance in the country. Therefore HMIS is a core system which provides management solutions to management questions through developed indicators which are applied at all levels of health delivery systems in the country. Health Management Information System indicators, are in the form of rates, ratios and absolute numbers. Each indicator has a threshold and target value whereby assessment of performance is based upon. HMIS data is very useful in managing health delivery systems in the country. Experience shows that the system provides managerial support to health facilities and Council Health Management Teams.

Administrative Record System

Health accounts (national and sub-national) provide information on the amount of financial resources for health. It should Breakdown by sources of finances that include public and private sectors (for example, government tax revenue, insurance schemes, rest of the world or international contributions, Private for profit sector, and household, etc.), by health functions (or health programme areas / major diseases) and by health providers.

National Health Accounts

The Ministry of Health and Social welfare through Directorate of Policy and planning is currently conducting National Health Accounts. The purpose of this exercise is to trace all the resources that flow through the health system over time. The study intends to answer the following questions:-

- Where do the resources come from?
- Where does the resource go?
- What kind of services and goods do they purchase?
- Who do they benefit?

The project is faced with financial limitation though some few development partners have shown interest to finance it.

Public Expenditure Review

The Public Expenditure Review (PER) in Tanzania has become an established component of the government planning and budgeting process. One of its key objectives is to ensure that the expenditure patterns of the government match with the policy priorities as stipulated in the Poverty Reduction Strategy Paper (PRSP). Therefore the presentation of the Public Expenditure Review (PER) provide important information on the following sub-sections: -

- The sect oral share of total government budget and expenditure;
- Absolute levels of spending, both nominal and real;
- Per capita allocation as well as expenditure for each Tanzanians.

Medium Term Expenditure Framework (MTEF) for the MoHSW

In Tanzania, the MTEF is a 3-year rolling work plan and budget. In order to plan strategically, it is important to analyze the performance of MTEF for the just concluded financial year. This is very important as it helps to identify strategic interventions with greatest impact on health status for more resources. MTEF is a source of financial information that reveals government and development partners commitments in promoting health status in the country. Also, it indicates priority areas both for government and development partners in health services delivery in the country.

Facility based surveys

In Tanzania there is two types of facility based surveys. The first is known as Service Availability Mapping Survey (SAM). The second is known as Tanzania Service Provision Assessment. (TSPA). Both systems collect its information from administrative records based at health facilities.

Service Availability Mapping (SAM)

SAM is a rapid assessment tool that generates information on the availability of specific health services, health infrastructure and human resources for health in each district. Two brief questionnaires, one for district medical officers and their teams and a second for health care facilities, are programmed in a PDA (personal digital assistant) and consist of several sections. These explore the availability and quantify human resources, infrastructure and services in the district and facility levels. A list of health care facilities is derived from the pre-existing WHO Health Mapper database and then updated as part of the district level questionnaire. The aim of Service Availability Mapping (SAM) is to collect key information on the availability of health resources and interventions and to use the results for operations and strategic planning and management. The benefits of SAM, however, are its systematic collection procedure and 'user-friendly' data presentation. Maps and summary measures generated through SAM provide a complete picture of the level and distribution of district resources, as well as highlight gaps in the provision of health services and interventions.

Tanzania Service Provision Assessment (TSPA)

The TSPA is implemented by the National Bureau of Statistics in collaboration with MoHSW. The survey is facility-based designed to extract information about general performance of facilities that offer maternal, child, and reproductive health services as well as services for specific infectious diseases like STI, HIV/AIDS, and TB. It provide comprehensive picture of strength and weaknesses of service delivery environment for each assessed service. The information is collected from representative sample of facilities managed by the Public sector, Private sector, Parastatal and Faith-based Organization (FBO)

3.0 Selected Indicators for Six HIS Building Blocks

The health sector as such has several indicators which are used to measure health performances of different aspects. This depends much on the need of specific areas Tanzania health sector, has few selected indicators that are used to gauge the performance of health delivery services. Selected indicators from different HIS are supposed to be reported on regularly basis. Selected indicators also are used to evaluate government commitments mentioned in preceding paragraphs. Although, there are few selected indicators for specific consumption, but other levels like regions, districts and health facilities and special programmes are requested to select more indicators for regular follow-up to serve specific interest of respective localities or programmes. It should be noted that not all indicators for Health Sector Performance Measurements are reported in this paper. For demonstration purposes, additional indicators have been included due to availability of data. Indicators in this paper are grouped into six major blocks. That is Financing, Human resources, Information, Medical products, Service delivery and Governance.

3.1.0 Financing

Amongst key and important monitoring and evaluation indicators are those related to health financing. By understanding the problem, the Government of Tanzania (GoT has explored a number of ways in an attempt to bridge the existing financial gaps to support government main source, which is through taxation. New additional sources for revenue that have been adopted are Health Insurance, Community Health Fund and Cost - Sharing Scheme. The essence of having financial indicators is to make a close monitoring to ensure availability of adequate resources that are channeled to the health sector by both GoT and development partners. The following indicators are produced on regular basis through Health Sector Performance Measurement Indicators Report. Out of 33 indicators, four of them are used to assess health sector financing. These indicators are -

3.1.1Total Government of Mainland Tanzania Public Allocation to Health per Capita

Public allocation to health per capita by the Government of Tanzania Mainland is an indicator which is used to show the government commitment to the health sector per person in the country. This is in line with the National Health Policy, an important instrument to the delivery of health services by ensuring fair, equitable and quality services to the community. Information in the table below was taken from Public Expenditure Review (PER) updates of 2005/2006. The below table shows an increase in government allocation at all levels of the health delivery systems. Total overall budget allocation for FY06 increased from Tsh 5,332 in FY05 to Tsh 7,819 in FY06. The increase is equivalent to 47 percent over FY05. Central and regional recorded relatively better increase

Total Government of Mainland Tanzania Public Allocation to Health per Capita

Indicator Level	Baseline Year	Indicator Performance				
	2001	2002	2003	2004	2005	2006
Central	1,245	1,529	1,702	2,799	3,230	4,902
Regional	172	208	242	351	298	507
District	848	1,058	1,334	1,375	1,804	2,410
National	2,265	2795	3,278	4,525	5,332	7,819

3.1.2 Total GoT and Donor Allocation (Budget and Off-budget) to Health per capita

This indicator tries to assess joint efforts between government and development partners. The indicator is interested in examining the total per capita spending on the public health sector (budgeted and actual) from the two main sources of financing. Moreover, it also tries to track overtime the level of assistance of Development partners compared to the Government of Tanzania. It is estimated that the Development Partners approximately provide more than 40 percent of funding towards the health sector in Tanzania. This has helped the government to reduce financing gap in relation to the actual requirement. It is important to note that it is not easy to estimate precisely the actual amount of funding provided by the Development Partners. This is because some of their funds are directly channeled to programs or through Non Governmental Organizations (NGOs) etc. Basing on the PER information the above table shows a general increase of per capita allocation from the Development Partners. Between FY05 and FY07 per capita has increased from Tsh 12,389 to Tsh 13,193. This trend has been maintained since FY00/01.

**Total GoT and Donor Allocation to health per Capita**

Indicator Level	Baseline Year	Indicator Performance					
	2001	2002	2003	2004	2005	2006	2007
National	5,100	6,361	6,868	8,815	12,389	12,130	13,193

3.1.3 Per Capita Government of Tanzania Recurrent Expenditure

This indicator aims at identifying areas that are the major recipients of Government of Tanzania resources, particularly the Central, Hospitals and Preventive Health Care (PHC). The key priority of GoT is to provide quality primary health care services, accessible to all Tanzanians particularly to the poor and most vulnerable. The figure below shows a comparison of the past three years that there is a slight decrease in the administrative share. In contrast to FY04 when the hospitals gained from this reduction, and the primary/preventive category was squeezed, this latter category rose from 42 percent to 44 percent over the last year. Though no information for FY06 but according to new policy of decentralization by devolution more decrease on administrative share is expected.

MOHSW recurrent spending by category, FY03-FY05
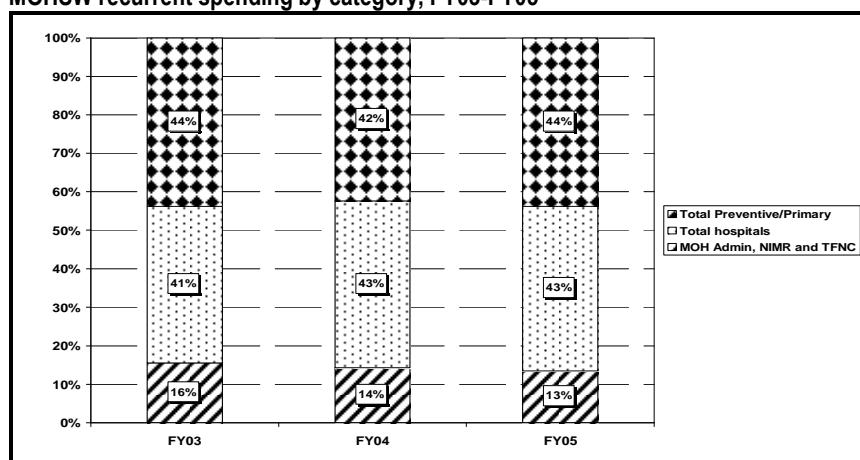
3.1.4 Percentage of GoT Funds Budgeted for Districts

This indicator shows government commitment to health service implementation at the LGA level. In this respect, the indicator provides information on the level of funding which the district health care services receive from the government to implement activities compared to other services at local level. To implement the policy of decentralization, Local Government Authorities (LGAs) (Urban and Rural) are now responsible for planning and managing resources for a number of sectors (including health) in the district. The figure below indicates that within the LGA budget, the more administrative sub-votes) appear to be increasing slowly at the expense of the primary level health facilities. Taken together, the share of Health centers and Dispensaries has fallen from 63 percent in FY03 to 57 percent in FY06. However, in the absence of a more complete picture of the LGA resource envelope - ie including other sources of funding, notably basket but also cost-sharing, local external resources, and councils' own contributions - this picture tells us little. In theory, such an analysis would be possible from the Comprehensive Council Health Plans but it does not appear that any aggregation of these is undertaken routinely by the MOHSW, as indicated in successive PER updates. This represents a missed opportunity for improved understanding and monitoring of council spending.

Budgeted allocations within the LGA, FY03 – FY06
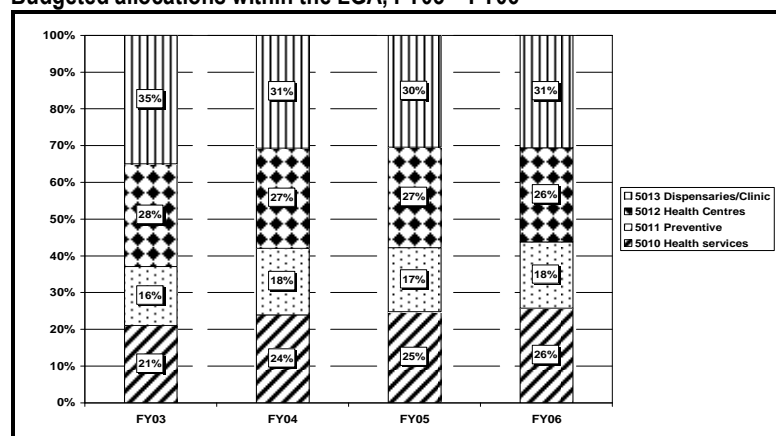
3.1.5 Data Quality

Information used to estimate health-financing indicators was taken from Health Sector Public Expenditure Review (PER) updates of 2000/01 up to 2006/07. The PER summarizes the approximation accounts of the Ministry of Health of Tanzania (vote 52). Vote 52 comprises recurrent expenditure, development projects and actual expenditure. In addition, some data were taken from the appropriation accounts of Region Authorities and Health Budgets for Local Councils. Information on population from 1988 and 2002 censuses and projections provided by NBS was used as denominator.

Quality of data used for estimating health-financing indicators has improved significantly since the inception of PER, seven years ago. At the beginning, it was not possible to split the development budget or expenditure between local and foreign funds. Also, equivalent figures in US dollar are used to enable comparison with other countries. Using PER data, it is possible to get real spending after putting into account the general inflation in the country by applying Consumer Price Index (CPI). Despite the improvement of data compilation, still the quality hasn't reached the required standards. This is because not all data required for PER can be easily obtained. Considering this situation, some of the computed indicators are just proxy indicators, which have to be interpreted with caution. For example, it is known that more revenue is coming from cost-sharing initiatives like National Health Insurance (NHI), User fee and Community Health Fund (CHF). Unfortunately, information on these new sources is not well reflected in the PER. Information from MTEF are generally good although sometimes the quality of data could be jeopardized by inflation and overambitious plans. On the system for data storage and analysis, the system is in place but it need further improvement.

3.2.0 Human Resources

The MoHSW Policy for Human Resource for Health aims at having a well planned, trained and deployed workforce to cope with the existing and emerging issues. This is to be achieved through adequate staff remuneration and holding them accountable with a focus on primary health care. This policy emanate from the Civil Service Reform that aims at a trimmed but efficient, task oriented and responsible to civil service.

Data quality

The availability of human resource for health is measured by the distribution of Medial Officers, Assistant Medical Officers and Public Health Nurses as a proportion of the staffing norm by health facilities. Data for calculating the indicator is obtained through survey conducted by the Human Resource for Health (HRH) Section of the Directorate of HRH Development. Alternatively, an analysis of data from payroll is done to obtain staff disposition in public health facilities. Analysis of payroll is limited to staff employed by Government and receiving salaries through Treasury. Data for HRH depend on periodic surveys, which are expensive to conduct and take longer period to obtain results. It is thus not possible to monitor trends on an annual basis. Putting into consideration that the ministry does not have a centralized data base system, it is difficult to establish trend even by using periodic information.

As a long-term strategy, the best method for collecting data on human resource is through routine data system (HMIS). This is because HRH data require frequent updating and covers all health workers in the country. Currently HMIS is faced with problem of incompleteness of reports and under reporting. As such the HMIS database does not provide data which portray a clear picture on the status of human resource in the country. Under HMIS, a new method of collecting information on service availability has been initiated with the assistance of WHO since 2006. The method allows getting results within a short period of time. Among information which was collected through this rapid assessment is on the availability and distribution of human resource. Below are some selected indicators from Service Availability Mapping Survey (SAM).

3.2.1 Distribution of Medical Officers as per 10000 Population

Using the results from SAM Survey in 2006, it was reported 1,339 physicians, including 455 in the private sector. The study shows that about half of all doctors were employed in Dar es Salaam region (52 percent), which had a doctor density per 10,000 populations which was 6 times higher than the national average. In 14 regions the study shows that had only 0.1 doctors or less per 10,000 populations. This is equivalent to one doctor per 100,000 populations. The national average was 0.4 doctors per 10,000 populations or one doctor for 25,000 populations. The interpretation of this is that excluding Dar es Salaam most of the doctors in regions have more workload. For national average no significant improvement because of high population growth rate.

The graph below shows Doctors and Assistant Medical Officers per 10,000 populations in each region. Here the assumption is that many of the functions of doctors are performed by assistant medical officers (AMOs), who have received a clinical training almost similar to that of general physicians. Also, the total number of AMOs in Tanzania was about the same as physicians, and the majorities are working in the public sector. Even after combining these two cadres the work load in most of the region has not changed for many years. The worse situation is observed in Shinyanga, Tabora, Kagera, Mbeya and Rukwa regions.

**Doctors and Assistant Medical Officers (AMO) per 10 000 population, Tanzania SAM 2006**
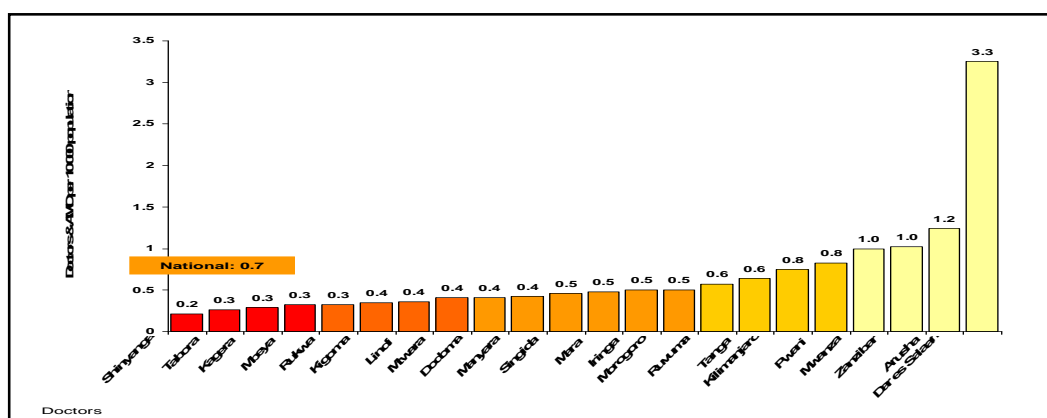
3.2.2 Distribution of Public Health Nurse as per 10,000 population

Using SAM results shows a total of 4,841 nurses and 9,990 nurse-midwives were found in the district. This corresponds with 1.3 nurses and 2.6 nurse midwife per 10,000 populations. The combined cadre of nurses and midwives shows that there is a density of nearly 4 per 10,000 populations. Many nurses and midwives are concentrated in Dar es Salaam region (8.5 nurses per 10,000) where as for the remaining 20 mainland regions the nurse-midwife density ranges between 1.4 and 5 per 10,000 populations. Below figures shows that Shinyanga, Tabora ,Rukwa and Kigoma regions are in a critical situation.

Nurses and midwives per 10,000 population, Tanzania SAM 2006
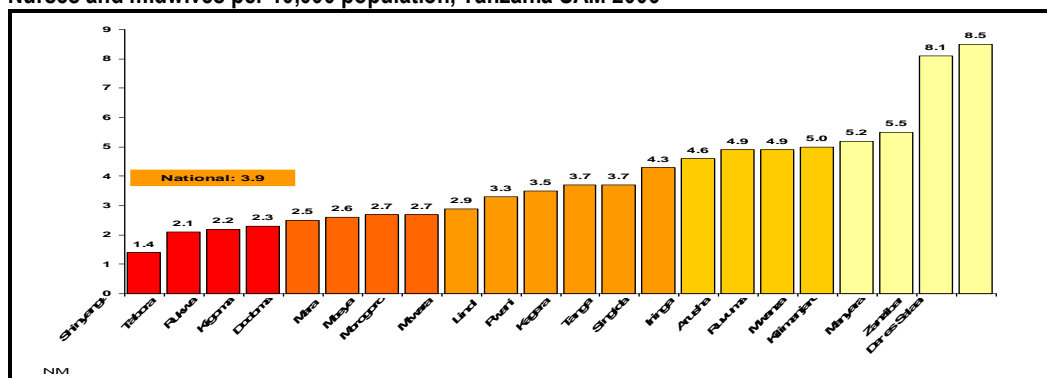
Density of nurses per 10,000 population by district, Tanzania SAM 2006.

Density of nurses per 100,000 inhabitants, by district
SAM – United Republic of Tanzania, 2005
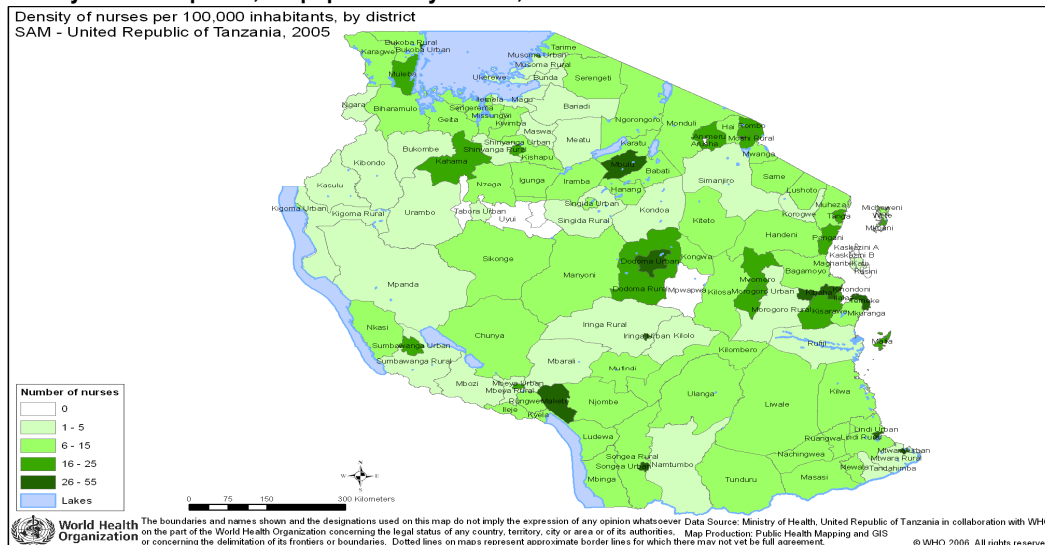
3.3.0 Health Information

As it is noted in the previous paragraphs, most of HIS are used to collect health related information. Health Information Systems are in two broad categories. The first category comprises systems that collect statistics through periodic surveys. The second category is known as routine data systems. Routine data systems collect its data mainly from health facilities. Health Management information system is a largest routine data system which covers all health facilities in the country. Also, it a system with a big number of indicators compared with other routine systems. Other routine systems are disease specific surveillances. These surveillances also, collect its statistics from health facilities which are included in the sentinel sites.

Quality of data

Data from surveys and censuses are regarded to be of high quality. This is because the whole process is well managed by employing quality control at different stages. Suspected shortcomings with data are explained during the analysis. Analyses sometimes employ sophisticated models which moderate data with defectives. Most of the surveys do not suffer from under funding as such surveys are executed within planned time frame. With good funding package, authorities managing surveys are able to recruit and employ highly skilled expert to conduct analysis. With skilled experts in analysis, even diffective data can be turned into quality information.

Quality of routine data, from routine systems varies from one system to another. Disease surveillances under NACP, TB & Leprosy, and Malaria programmes, data from these systems are of good quality since data collection follows the required standards. Their reports are complete and reporting rates are very high. The quality of data is guaranteed by a good data validation mechanism that is in place. The programmes have good systems due to the excellent funding levels of M & E issues. As such this has helped much to conduct supporting supervision according to planned schedules.

Data from HMIS its quality deserve a lot to be desired. When HMIS was initiated, by then the system was under DANIDA support financially. Other development partners like world bank, CUAM and GTZ also supported HMIS financially. Quality of data was improving year after year due to systematic supportive supervision. In 2004 HMIS started getting its funding through basket funding as such HMIS activities started to be of less priority compared to other priorities. HMIS under funding affected a number of activities necessary for data quality improvement. The system stopped to respond as a result no transfer of data from lower levels to central office was happening. Also, supportive supervision dropped down drastically at all levels of the system. Currently, reports which are received at the central office are hard copy reports, which are prepared for Regional Medical Officers (RMOs) conference. Data in those reports are not complete since most of the private health facilities do not report. Data validation is not guaranteed which means most of RMOs reports have poor quality statistics. Despite with all shortcomings, all analytical reports prepared at the MoHSW relay on RMOs reports. Analytical reports includes Health statistical Annual Abstract, Health Sector Performance Indicator, and Country Health Profile. Unfortunately, regions and districts do not analyse HMIS may be due to limited capacity as a result this has contributed to poor quality at those levels. By doing so this would have helped to detect some of errors much earlier. Due to poor performance of HMIS, it is now not possible to estimate some indicators like reporting rates by health facilities, districts and regions; OPD attendances, admission rates bed occupancy etc. Strategies to coordinate health information are explained under the paragraph discussing "efforts by government to improve HIS in the country.

3.3.1 Selected indicators from HMIS

Number of outpatient attendance per capita

Health service utilization is a key indicator in assessing performance of the heath sector. If utilization of this service is high in the public health, there is some indication that the population has confidence in the provision of health services, especially where the private sector offers similar services or health seeking behavior allows people to go to traditional and spiritual healers. In this respect the number of outpatient attendance per capita shows the utilization of health facilities by the population. For many years the government has been encouraging its people to seek medical services once they become sick. OPD is leading department in most of the health facilities to get patients. This means OPD per capita provide a general picture on the utilization of the health services at a health facility.

Information reported through HMIS shows that there an increasing trend for OPD utilization. In 2001 one person attended OPD less than one times. But in 2006 most of the people attended almost once and few of them more than once. This a clear indication that seeking health behavior has changed as more people goes to health facilities for treatment. Refer to the following table

Number of outpatient attendance per capita

Indicator Level	Baseline Year	Indicator Performance					
	2001	2002	2003	2004	2005	2006
National	0.71	0.72	0.78	0.78	0.9	1.06

Morbidity

Available information from HMIS indicate that malaria, acute respiratory infection, pneumonia and diarrhea disease were the major causes for outpatient attendance for age under 5. Malaria accounted for 39 percent of all the OPD attendances see the table below

Top ten OPD patients diagnoses age below five years, Tanzania Mainland: 2004/05
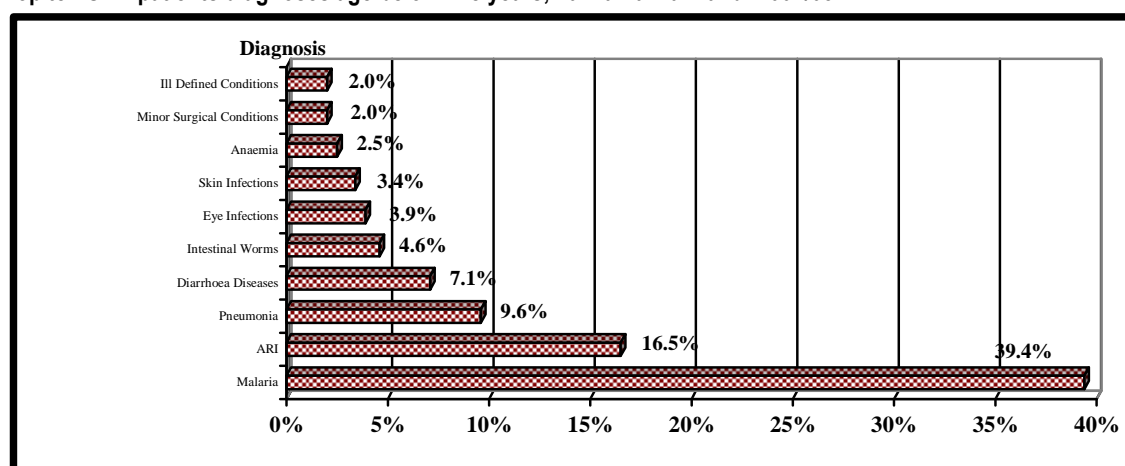
ART: Acute Respiratory Infections

The table below shows the percentages of patient's age five years and above who were admitted at health centers and hospitals on Tanzania mainland. The population age five years and above who got admission, 42 percent were malaria cases. Other admissions in that age group were due to ARI, diarrhea disease and intestinal worms. Tuberculosis and anemia were also among the top ten leading causes of admission in all age groups. HIV/AIDS ranked number eight as the cause of admission among population age five years and above.

Top ten leading causes of admission for patients age five and above for year 2004/05
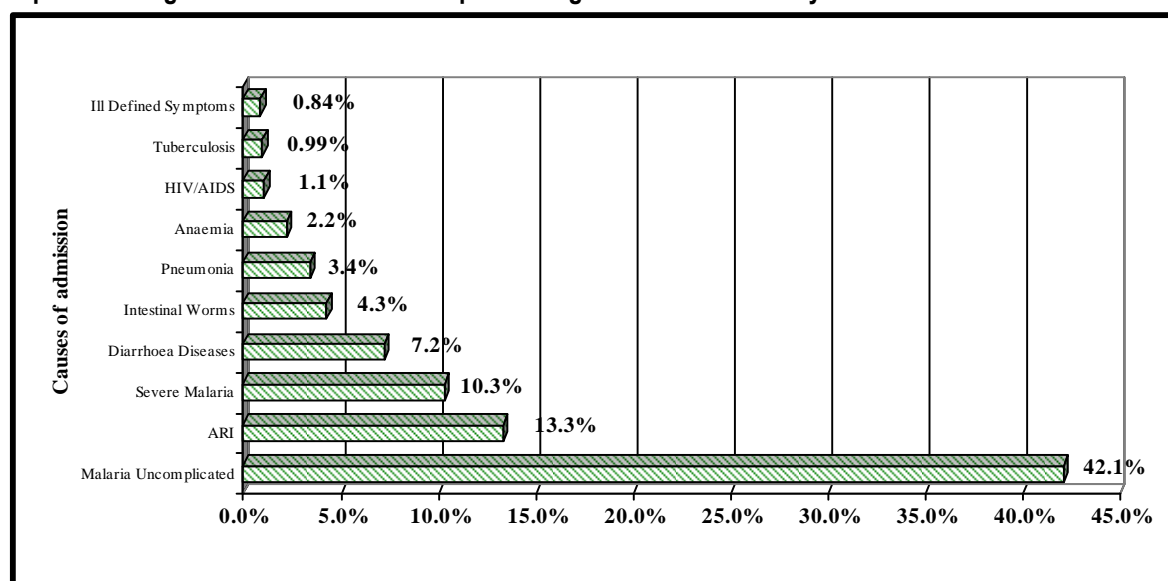
Mortality

The following below figure shows the percent of children age five years and above who died at health facilities across Tanzania Mainland. The data presented exclude data of deaths from Referral hospitals. Malaria is the leading cause of death while HIV/AIDS is the second cause of death among the adults. Other causes after HIV/AIDS are shown on the figure.

Top ten leading causes of deaths for patients age five years and above, Tanzania Mainland: 2004/05
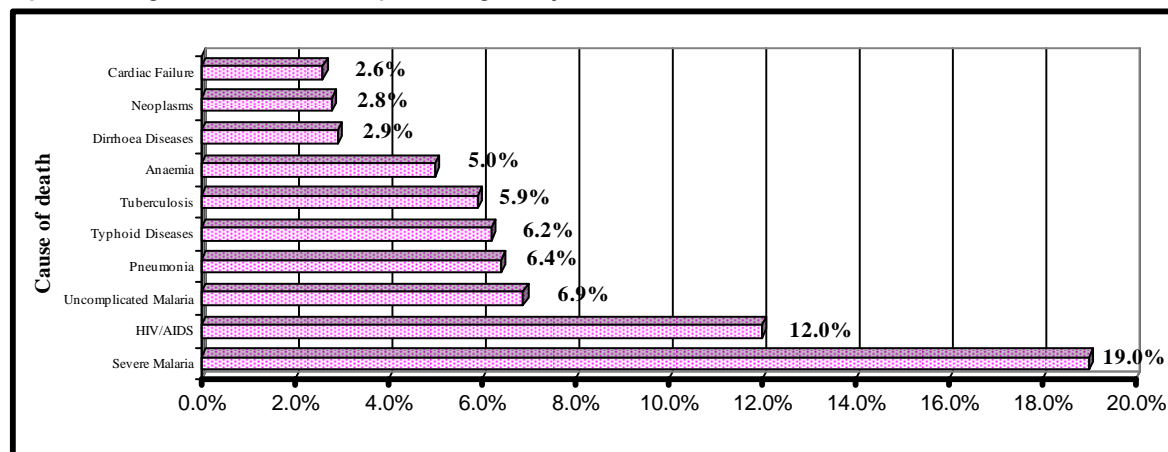

3.3.2 Data from surveillance systems

The figure below shows that the highest numbers of measles cases were recorded during the month of September at 120, otherwise the numbers of measles cases were on average below 40 cases per month. As regard to meningitis, the highest number of cases was recorded during the period of May – September during which more that 100 cases per months were recorded. As for Rabies less than 20m cases per month were recorded throughout the year 2005

Number of Measles, Meningitis and Rabies cases recorded, Tanzania Mainland:2005
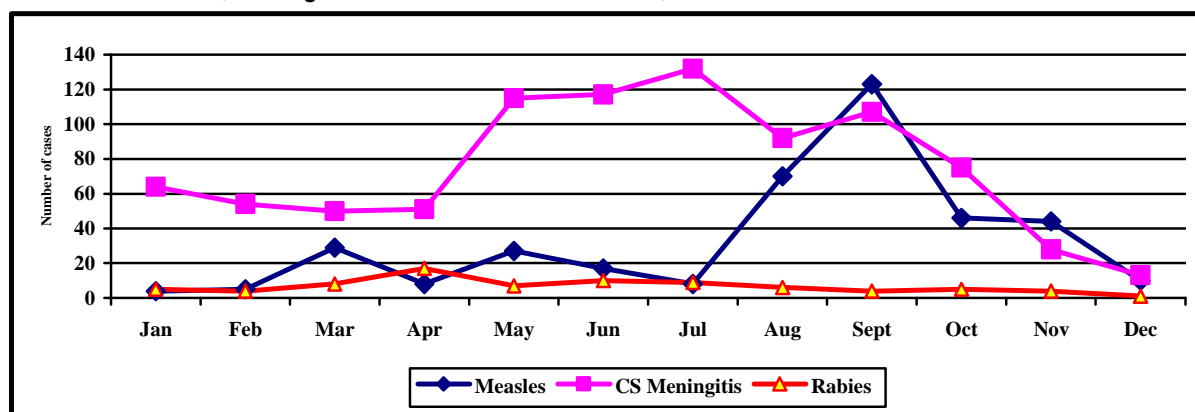
The following line graph illustrates trends in the age and sex specific prevalence of HIV infection among the blood donor population for the years 1996 to 2004. Between 2003 and 2004, prevalence in all age groups showed a decreasing trend except among females in the age group 15-24 years whose prevalence virtually remained constant. The aberrant trend in this age group calls for further investigation to establish whether the rate of new infections in this age group is on the increase compared to other age groups and especially males of a similar age purpose. Similar information however may better be interpreted in the preceding graphs.

Age and sex specific trends of HIV infection, Tanzania Mainland: 1996 - 2004
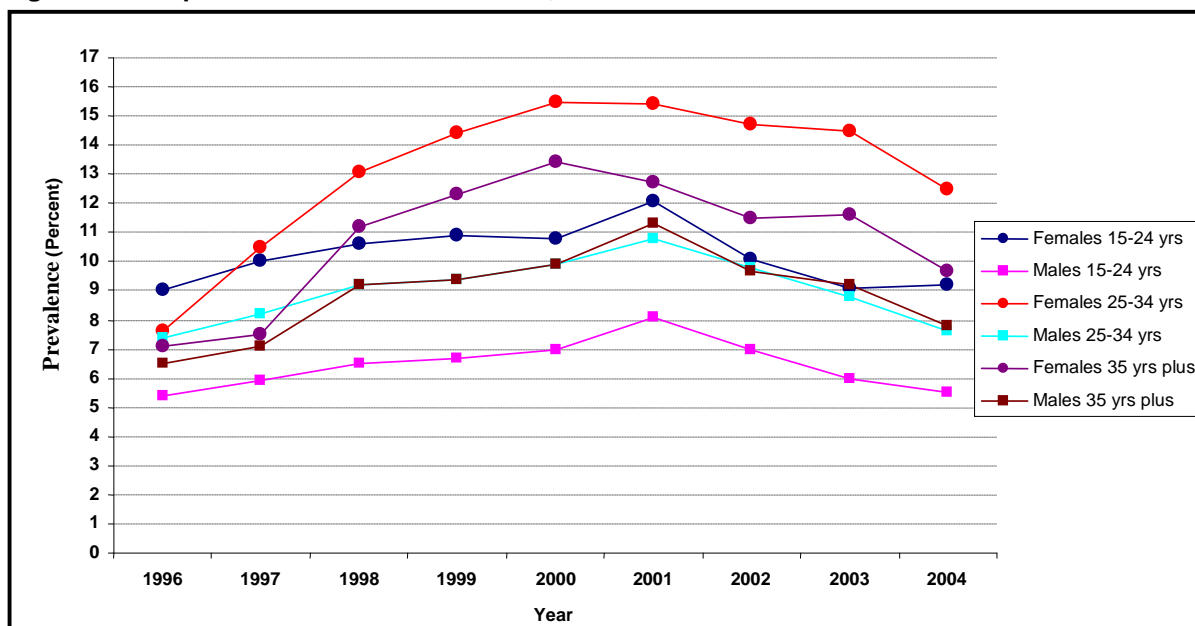

TB Treatment Success Rate

Performance in TB/Leprosy Programme is measured using proportion of TB treatment completion rate. A patient is said to have completed treatment after using anti-tuberculosis continuously for eight months. Throughout, this programme had continued to be implemented through vertical approach which is heavily funded through partners as a result there have been a successful trend in treating TB. A set target for FY07 is to get success rate equal or grater than 80 percent. The available information from TB and Leprosy programme shows that in 2005 the performance stands at 82.6 percent. According the way the data is collected and compiled, the possible recent indicator will always reflect two years back. In this respect using the available information TB programme is considered to be on the successful truck.

3.3.3 Health statistics from surveys

Postneonatal, Infant and Under Five Mortality Rate (PNM, IMR & U5MR)

The table below shows trends in early child mortality rates. The difference between infant and neonatal mortality gives postnatal mortality PNM). The Infant Mortality Rate (IMR) measures the probability of a child dying before its first birthday while Under-Five Mortality Rate (U5MR) measures the probability of a child dying before attaining age five. These indicators reflect a country's level of socio-economic development and quality of life. They are commonly used to assess the overall performance of the health sector. The Poverty Reduction Strategy Paper (PRSP) has set targets to be met by year 2025 as follows: to reduce IMR from 99 per 1,000 live births in 1999 to 85 per 1,000 live births in 2003, 50 in 2010 and 20 per 1,000 live births by 2025. The U5MR is set to decline from 192 in 1988 to 127 by 2003 and to 79 per 1,000 live births by 2010. Results from the 2004/05 TDHS shows a general decline of three mortality measurements from 1996 TDHS.

Trends in early childhood mortality Rates
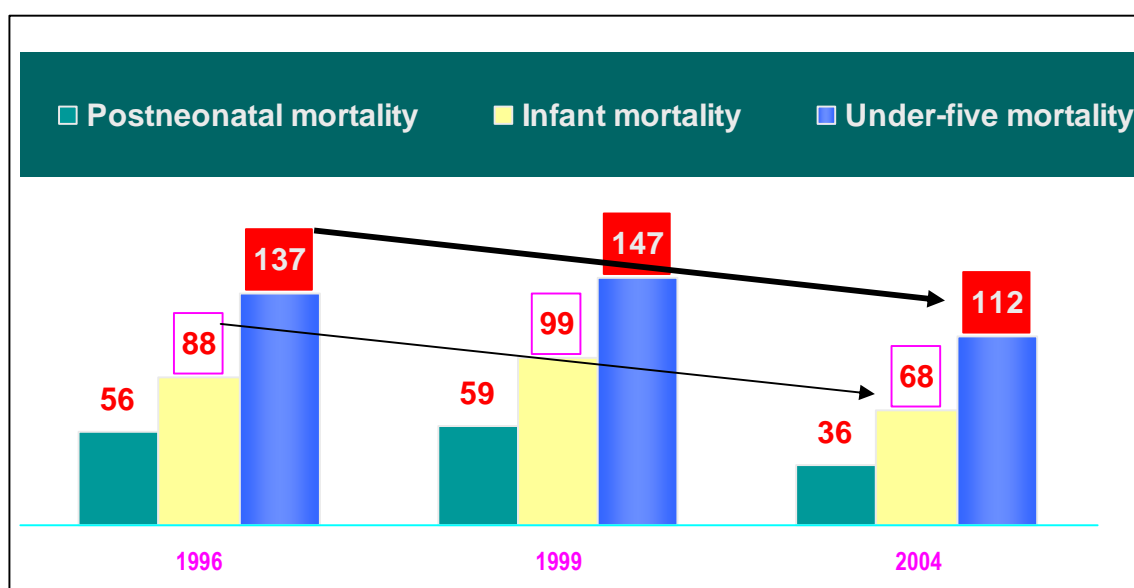
3.4. 0 Medical products and commodities

*3.4.1 Percentage of Public Health facilities without any Stock-outs of Four Tracer Drugs and One Vaccine*
Availability of drugs is measured by the percentage of public health facilities without any drug stock outs of 4 tracer drugs and one vaccine. Due to limitation in the availability of data at the national level it was not possible to establish number of stock out days for selected items. Data collected from 10 selected districts in the country showed a varied range of shortage of tracer drugs amoxylin, PPF and Ergometrine, as shown in the figures below. The average drug stock out days per facility ranged between 7 and 13 stocks out days in a quarter. Drug shortage was more experienced at a health centre compared to dispensary level. Stock outs were more pronounced on Amoxylin tablets than with other drugs.

Data quality (Average stock out days per facility of 4 tracer drugs and one vaccine) the source of data for the calculation of these indicators is the HMIS. However, due to inadequate flow of data from the districts to the national level, the data are often not available for the calculation of these indicators at the national level.

Mean proportion of stock out days for the three trace drugs for HCs
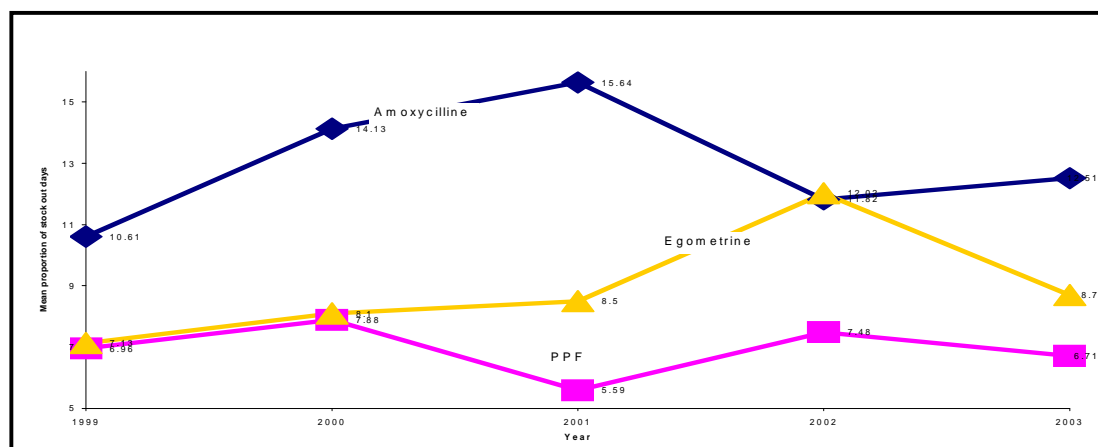
Mean proportion of stock out days for the three trace drugs for Dispensaries
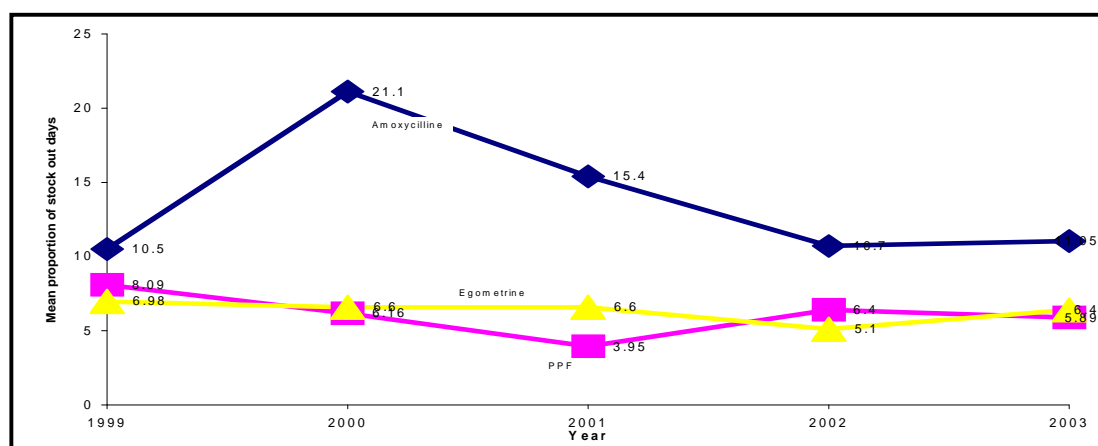
Source: Ministry of Health, District Health Profile 2005

3.5.0 Service Delivery

Service availability is key component in the whole process of health delivery system. This component can be measured by a variety of indicators, and this would depend much on the availability of required information. Indicators for this component try to achieve service delivery coverage in terms of accessibility, quality and efficiency. Under this component a number of aspects need to be assessed. This includes use of technology, infrastructure, improving organization, management and quality of services. Some of aspects can be easily measured accurately while others need specialized studies like information on quality and efficiency. Input such as technology and infrastructure can show service availability and can be monitored more accurately.

In the health system performance indicators there is no indicator that was earmarked to evaluate service delivery component. This problem will be addressed in the M & E Technical committee which is supposed to review health sector performance indicators from time to time. Despite the fact that no specific indicators for service delivery component existing systems like HMIS, Service Availability Mapping Survey (SAM) and Tanzania Service Provision Assessment (TSAP) can provide useful information that can be translated into indicators which can show service availability, quality of services and efficiency. Examples are shown below: -

The figure below shows the distribution of health facilities per per 10,000 population by region. The five regions of Zanzibar were combined into one figure. It is noted that the type of facility was not taken into account and that differences in the size of facilities (hospitals, health centres and dispensaries) may explain some of the differences between regions. Overall, there are 1.52 health facilities per 10,000 people, ranging from a low of 0.93 in Shinyanga to 2.41 in Pwani (Coast) region. Three regions in the Lake zone Shinyanga, Kagera and Mwanza, have the lowest densities. The Lake zone is also the most population zone of Tanzania.

Health facilities per 10,000 population by mainland region and Zanzibar,
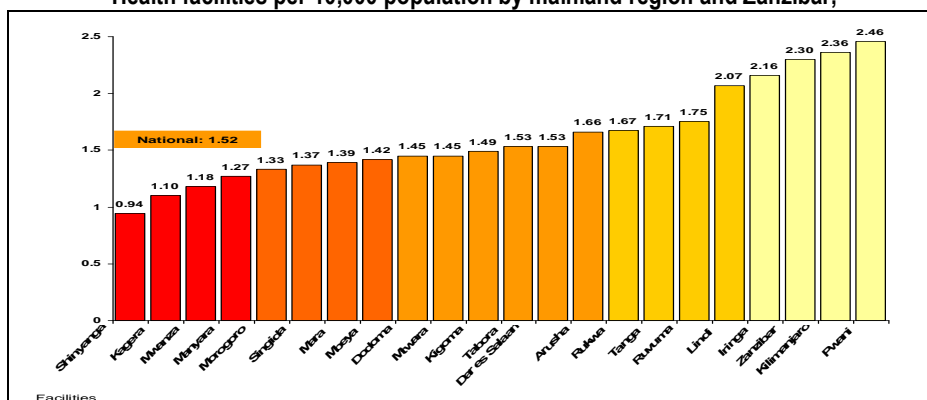
3.4.2 Items to support quality examination for STIs

Figure below shows items to support quality examination for STIs. Facilities can better diagnose and treat STIs when are supported and there is an adequate infrastructure for physical examination, laboratory diagnostic support, and medicines for treating specific STIs. Quality physical examination requires infection control measures and adequate infrastructure and basic equipment for client examinations.

Information on availability of certain commodities was collected through survey known as Tanzania Service Provision Assessment (TSPA). The 2006 TSPA is a facility based survey designed to extract information about the general performance of facilities that offer maternal child and reproductive health as well as services for specific infectious diseases (STIs, HIV/AIDS and TB) The survey was conducted in collaboration with NBS.
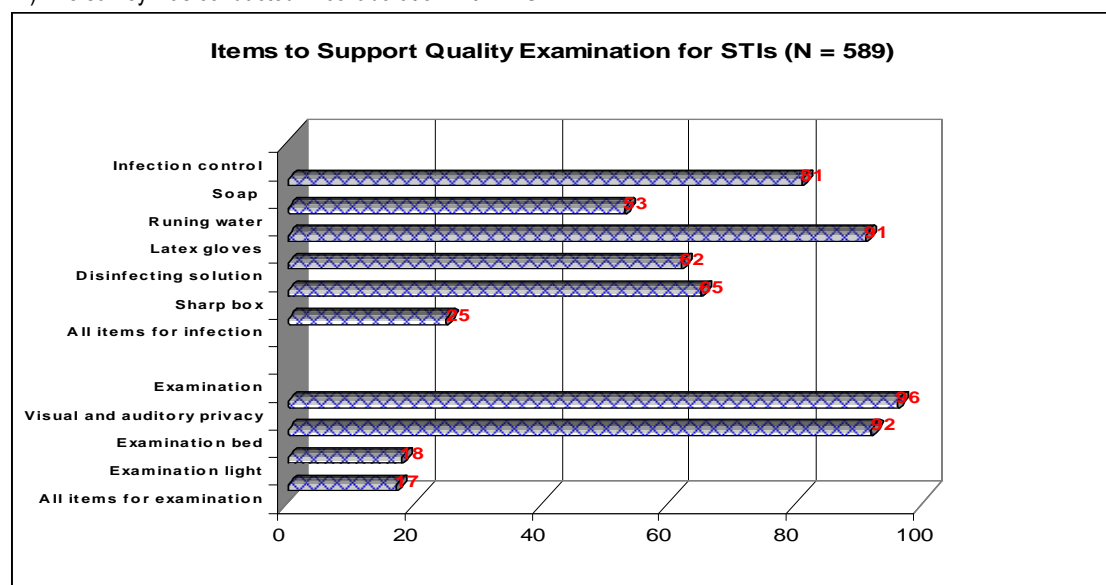
3.6.0 Governance

In the health sector there is no indicators set specifically to evaluate good governance. However, under National Strategy for Economic Growth & Reduction of Poverty (NSGRP-MKUKUTA) there are some indicators on good governance.

4.0 Efforts by Government to Improve Health Information System

Government efforts to improve Health Information System in the country were conceptualized in the early 1990s. This is after realizing that there was a need of having a comprehensive and integrated system of routine data collection, storage, analysis and dissemination using up to date technologies and approaches. The Health Management Information System (HMIS) was introduced in the country from 1993. The aim was to support health sector reform that was about to take place in the country. The implementation of the HMIS was done in phases with the biggest support coming from some of our development partners.

As part of HMIS strengthening in the country a number of reviews were initiated at different part of period.

Previous reviews on HMIS

- In 1997 MoH review workshop recommended substantial adjustments to the contents and scope of HMIS;
- In May 1999 there was a joint initiatives of MoH, WHO, and USAID on Assessment of Infectious Disease Surveillance Systems in Tanzania. The study was done with assistance from Centers for Disease Control and Prevention (CDC) Atlanta USA, and the Environmental Health Project (HEP). Under this initiatives a number of recommendations to strengthen HMIS and other health information systems were proposed;
- The 2000 review on HMIS was the biggest and detailed study which covered all aspects of health information systems. Its recommendations are still being implemented up to date and are monitored through Joint Annual Health Review (JAHR).

Other strategies

Since 2001 up to date HIS has been one of key component of JAHR. In each review, milestones on HIS development are set. Examples of milestone outcomes are formation of Monitoring and Evaluation Technical Committee and establishment of Health Sector Indicator Performance Profile Report. The M & E Technical Committee, is working under Sector Wide Approach (SWAP) which is co-chaired by the Permanent Secretary of MoHSW and the Prime Ministers Regional Administration and Local Government (PMO-RALG). Its main role is to develop strategies that would improve the performance of Health Information Systems directly operating under health sector.

The Directorate of Planning and Policy in the MoHSW through its Health Information and Research (HIR) Section is responsible for managing Health Management Information Systems (HMIS), Demographic Surveillance Systems (DSS) and Health Research Systems. Recognition of the weaknesses of health information systems in the in different departments in the ministry, the HIR section is currently being restructured in line with Health Matrix Network (HMN) framework. The section will be known as Monitoring and Evaluation (M & E) Section. Its main responsibilities would be to maintain the current systems that are HMIS, DSS and Health Research Systems. Also, to coordinate other sub-systems managed by other departments and special programmes e.g. Disease surveillance, HIV/AIDS, TB & Leprosy etc. The aim is to harmonize the production of health statistics and avoid duplicates.

5.0 Health Matrix Network Initiatives

Tanzania is participating in the Health Metrics Network (HMN), a global initiative working towards strengthening Health Information System (HIS), particularly in developing countries. HMN goal is to increase availability, accessibility, quality and use of health information through a well coordinated framework. Health Information Systems in Tanzania operates under different ministries, departments and agencies. This situation has allowed overlap and duplication of information and resources. Tanzania is in the process to overcome these problems by adopting HMN framework that allows active involvement of many stakeholders who have roles and responsibilities in different areas of health information.

Implementation Progress

Building up HMN framework in Tanzania started way in early 2006. This is after Tanzania to be among countries which qualified for grant amounting $175,000/= after fulfilling necessary requirements. The requirements were: Formation of a technical working team; Preparation of strategic plan and budget ; Application for funding according to HMN guidelines; Solicit signatures from stakeholders to show their commitment to this programme; Signing the MoU between MoHSW, HMN secretariat Geneva and institution for channelling funds (Ifakara Health Development Research Centre). So far Tanzania has received $ 87,000/= for initial implementation. Activities which have been accomplished are:-

- Assessment of existing health information systems;
- Preparation of assessment report.

Activities which are not yet implemented under the first instalment of funding are:-

- Preparation of a strategic plan and budget for HIS strengthening according to findings from the assessment;
- Preparation of Health Information policy guideline document for health sector.

Implementation Constraints

Strengthening HIS specifically in developing countries is a complex undertaking. It requires the active involvement of different stakeholders. Unfortunately, many of them have many functions and responsibilities which deter them from active participation. Other problems are: -

- Funding is still a biggest problem to the strengthening process of HIS. As such it affect data analysis supportive supervision etc;
- M & E was not in a priority list of MTEF as well in HSSPII.
- Shortage of qualified staff at health facility level. Due to this the quality of data from routine data system is highly affected;
- HMIS computer system is not working in most the district in the country
- Lack of necessary skill in data analysis and interpretation at all levels of health delivery system;
- M & E meetings are not happening regularly.

6.0 Way Forward

Tanzania like other developing countries is challenged to put in place a sound HIS. This is because there is a growing demand for M & E indicators than ever. The increasing needs for information has been much influenced by Health Sector Reforms in the country and local and international commitment by the government. These commitments are Millennium Development Goals (MDGs), National Strategy for Growth, Reduction of Poverty (NSGRP), and General Budget Support (GBS) etc. To meet commitments, a number of intervation like EPI, IMCI Safe motherhood initiatives etc are currently being implemented. Performances of intervention need to be monitored and evaluated time to time.

As part of HIS strengthening, a number of initiatives have been initiated by the government in collaboration with development partners. The government has modified it health policy and policy statement on HIS requires Health Information and Research Section to be overall coordinator of health sector information. The coordination should be linked through M & E Technical Committee and SWAP Technical Committee as well as SWAP Steering Committee.

Sector Wide Approach Planning has created an ideal opportunity for making HIS strong in the country. This is because under this forum different stakeholders including Development partners are involved. Other opportunities for HIS development are: -

- Norway Tanzania Partnership Initiatives (NTPI). Under this partnership, HMIS is going to get substantial amount of funding for the coming 5 years. If the project document get endorsed by MoHSW management, HMIS will be managed as a project ;
- Making M & E one of the key components of Health Strategic Plan III;
- Phone for health project to be initiated any time from now;
- Part of Statistical Master Plan which is operating under National Bureau of Statistics (NBS).

All these opportunities need to be well coordinated. Using HMN framework will help to the great extent to harmonize various initiatives that focuses on strengthening HIS in the country. In view of HMN approach the following activities are going to be given high priority: -

- Health Information Policy Guideline;
- Strategic plan for HIS and to be integrated in HSSPIII;
- To integrate HMN activities in the framework of SWAP;
- To restructure Health Information and Research Section to M & E section with a bigger role HIS coordination.

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