

Abbreviations

ANC	Antenatal Clinic
ART	Antiretroviral Therapy
CCHP	Comprehensive Council Health Plan
CFS	Consolidated Fund Services
CHF	Community Health Fund
CHMT	Council Health Management Teams
DPP	Department of Policy and Planning
EPI	Expanded Program on Immunization
FBO	Faith Based Organization
FOB	Faith Based Organizations
FY	Financial Year
GAVI	Global Alliance for Vaccines and Immunization
GSK	GlaxoSmithKline
HBS	Household Budget Survey
HMIS	Health Management Information System
HRIS	Human Resource Information System
HSF	Health Services Fund
HSSP III	Health Sector Strategic Plan III
IDSR	Integrated Disease Surveillance and Response
ILS	Integrated Logistic System
ITN	Insecticide treated net
JAHSR	Joint Annual Health Sector Review
LGA	Local Government Authority
MCH	Maternal and Child Health
MKUKUTA	National Strategy for Growth and Poverty Reduction
MMAM	<i>Mpango wa Maendeleo wa Afya ya Msingi</i>
MOFEA	Ministry of Finance and Economic Affairs
MoH	Ministry of Health
MOHSW	Ministry of Health and Social Welfare
MSD	Medical Store Department
MTEF	Medium Term Expenditure Framework
NBS	National Bureau of Statistics
NHIF	National Health Insurance Fund
NSGRP	National Strategy for Growth and Reduction of Poverty
NSSF	National Social Security fund
PER	Public Expenditure Review
PHC	Primary Health Care
PMO-RALG	Prime Minister's Office-Regional Administration and Local Government
PPP	Public Private Partnership
PRSP	Poverty Reduction Strategy Plan
RHMT	Regional Health Management Teams
SA	Salary Adjustment
SAWP	Sector-Wide Approach
SHI	Social health insurance
SHIB	Social Health Insurance Benefit
TFDA	Tanzania Food and Drugs Authority
TIKA	Tiba kwa Kadi
UMASIDA	<i>Umoja wa Matibabu Sekta Isiyo Rasmi Dar es Salaam</i>
UNICEF	United Nations Children's Fund
VIBINDO	Micro Health Insurance Scheme Programme

EXECUTIVE SUMMARY

Background: Tanzania's national strategy for growth and reduction of poverty has been the national guiding framework for growth and poverty reduction in the second half of 2000s. While Tanzania has made significant progress in reducing infant and child mortality and some progress in aspects of child malnutrition, the sustenance of these progresses depends much on the coverage of interventions, socio-economic development and changes in, ecological, demographic and epidemiological patterns. All these necessitate a review of the current strategies for a better improvement in the health delivery service in Tanzania.

Objective: To improve the availability of the required mix of services at various levels of the health system to ensure quality of health service delivery and their consequences on the health outcomes and also to mitigate the impact of climate change on the health of the population by putting in place mechanisms to respond proactively against the epidemics.

Methods: A desk review of government policy document, published and internet search was done to (i) assess the status of implementation of Primary Health Service Programme; (ii) assess the status on equipment, vaccines, medicines, and supplies at lower levels of health delivery system; (iii) explore further roles to be played by the devolution of responsibilities for health facilities and health planning to Local Government Authorities; (iv) explore the potential of different health financing options; (v) explore the issues behind little progress in some health indicators e.g. maternal and neonatal mortality and suggest a practical way forward to come to workable solutions; and (vi) address the impact of climate change on the health sector.

Findings: *Primary Health Service Programme:* In light of the perceived role of PHC towards poverty reduction, an overview of the implementation status of the MMAM is presented in relation to the essential health systems' inputs needed to realize the health sector-related NSGPR targets. Findings from the analysis indicate that quality of health care both professionally determined and as perceived by users have seen some improvement. Reports indicate that ability to deal with diseases such as malaria, implementation of vitamin supplementation programmes, drug supply to facilities and health workers attitude to provide care have improved to satisfactory levels. In addition, health workers have been trained in many districts to implement such programmes as IMCI, services for PMTCT have been improved and expanded throughout the country. Government funding has also been incrementally although still below the Abuja commitment. There has also been some improvements in maternal health services, Tuberculosis treatment services, immunisation coverage. Insecticide treated nets coverage and utilisation among children and pregnant mothers has also improved over the years. Generally, the HIV prevalence rates have been reported to be declining due to integrated implementation of a number of health programmes under the auspices of PHC framework. In spite of these notable improvements, the analysis has highlighted some obstacles which might potentially hinder the smooth implementation of the PHC programme or reverse the benefits achieved so far. One of the critical challenges is inadequate human resources both in terms of numbers and the necessary skills to implement health programmes. Details of other challenges are described in the main text.

Medicines and Equipment: The availability of medicines and medical supplies at lower level of health services delivery is not satisfactory despite the introduction of different strategies. This is mainly attributed to (i) insufficient of drugs budget, (ii) low capacity of health facility staff in forecasting need of the facilities and (iii) delays in procurement and/or distribution by Medical Store Department. Coverage of each immunisation antigen increased from 50% to over 90% in

2000s of <1 year children, and it has significantly contributed in reducing mortality among children. On the other hand there is an increase by 7.4% in number of health facilities in providing routine vaccination during the past four years. Coverage of each immunisation antigen increased from 50% to over 90% in 2000s. There is an increase in number of health facilities providing routine vaccination (from 4072 in 2005 to 4374 in 2008). Despite the encouraging recorded increase in coverage of EPI vaccines, there has been a steady decrease in coverage of DPT-HB3 from year 2004. Currently, there has been a significant shift in funding for EPI vaccines activities which has affected the implementation social mobilization/village campaigns and monitoring and evaluation activities. Overall there have been improvement in supply of medicines, equipment and medical supply in public health facilities, but still there is shortage. In order to realize the NSGPR targets, the government needs to improve availability of medicine, equipment and medical supplies at lower level of health services delivery

Devolution of responsibilities: Decentralisation by Devolution is the latest reform process adopted alongside the Local Government Reform Process in Tanzania with a key focus to shift responsibilities from central to local government structures. Many of the organizational elements have been established to allow the councils and their health management teams to undertake meaningful budgeting through the CCHP and to supervise and operate local health facilities. Moreover, Legislation to give effect to the reforms has been enacted and legal instruments necessary for implementation of the reform have been issued. However, this reform process has encountered several constraints such as staff shortages, poor performances of the available health workers, inadequate managerial skills, poor and inadequate infrastructure and irregular availability of drugs and supplies. The programmes, projects and activities implemented under the D by D have contributed to improvements in health outcomes and to some improvements in the quality of health services at community level. There has been a limited use of research/scientific evidence for planning, monitoring and evaluation of programmes.

Health Financing Options: Health service delivery continues to remain largely financed by public resources through the government budget. Large share of government budget of the total budget is allocated to health sector. Despite the large share of government budget allocated to health sector, the sector remains largely underfunded. The health per capita spending of around US\$ 11 is well below the required WHO estimate of US\$ 34. Other sources of funding health sector, including pooled funds, private contributions, user fees, and private contributions have also provided significant funding to the health sector. Significant achievement in decentralizing health service delivery and funding to the local levels have been recorded, with more than 40% of government health budget being spent at the LGA level. This has significantly helped to improve health services in rural areas as well as improving health indicators. There is also a significant funding to the health sector which is off-budget, through HBOs, CSOs, NGOs, for which health services are provided for free or beneficiary pay directly. Foreign financing, which targets more on development activities, is a significant amount of the health budget but it is declining overtime. It is recommended that the Government should try to protect budgetary allocations to the health sector, and reverse as soon as possible the declining trend of resources channelled the sector. There is need to make some more efforts in order to get a significant share of off-budget funding into the budget so that it becomes easy to account for the overall funding of the sector as well as monitor the progress achieved in health outcomes. The Government needs to address the issue of disparity among district in terms of resource allocation, which is the result of allocating resources based on existing number of staff and facilities among districts. There is also need to address shortages in budgetary allocations for health sector infrastructure maintenance. There is a need for regulation of the health insurance industry so as to be able to get a consistency between the different schemes. Community Health Fund (CHF) coverage needs to be expanded to the rural areas around the country, as it is recommended way of funding health service provision especially for rural poor.

Progress in Maternal and Neonatal Health Indicators: Tanzania has made significant progress in some health indicators including reducing infant and child mortality as well as some progress in aspect of child malnutrition. However, there is little progress in reducing neonatal and maternal mortality. Tanzania is among countries with highest maternal and neonatal mortality where are significantly more in rural than urban setting. Maternal mortality ratio ranges from 578 to 950 per 100,000 live births while neonatal mortality rate is estimated at 32 per 1,000 live births and accounts for nearly 50% of infant mortality rate in the country. Approximately 80% of maternal deaths in Tanzania are due to preventable causes; including obstetric haemorrhages, obstructed labour, pregnancy induced hypertension, sepsis and abortion complications. On the other hand, nearly 50% of newborn deaths occur in the first 24 hours of life while over 75% of them happen in the first week of life. Major causes of neonatal deaths in Tanzania include sepsis, pneumonia, tetanus and diarrhoea. Indirect factors that could contribute to little progress in reduction of maternal and neonatal mortality in Tanzania is low coverage of Mother and Neonatal Care interventions and services due to inadequate resource allocation which has resulted to poor quality of service. About 62% pregnant women attend antenatal care visits four or more times as recommended. Furthermore, only 47% of all births in Tanzania occur at health facilities and 46% of all births are assisted by a skilled health worker. Other factors include inadequate of provision of emergency obstetric care services in most health facilities. Currently only 64.5% of hospitals are providing comprehensive Emergency Obstetric care (EmOC) while only 5.5% of health centres are providing Basic EmOC and only 5 % of health facilities provide comprehensive post abortion care. It is estimated that 83% of women who deliver a live baby outside the health facility do not receive a postnatal check-up.

Impact of Climate Change on Health Sector: The world's climate is changing and will continue to change at rates projected to be unprecedented in recent human history. Vulnerability to the risks associated with climate change may exacerbate ongoing socio-economic challenges. In addition to natural disasters such as floods, landslides, and droughts, climate associated infectious diseases such as malaria, schistosomiasis, Rift Valley Fever, meningococcal meningitis, cholera, and other diarrhoeal diseases are common health problems in Tanzania. Unfortunately, there is no single policy document that is solely responsible for climate change in Tanzania. The National Environmental Management Act Policy of 1997, which recognizes the importance of climate change, calls for responsible ministries to put up measures to address climate change. A Disaster Management Division under the Prime Ministers Office is responsible for response to all types of disasters in the country. However, mandates to respond to diseases epidemics are directly under the Epidemic Preparedness and Response Unit of the Ministry of Health and Social Welfare. . All environmental management issues *inter alia* climate change are coordinated by the Vice President's Office.

Conclusion: There are number of challenges to implementing the primary health care programme. Overall there have been improvement in supply of medicines, equipment and medical supply in public health facilities, but still there is shortage. Also public health facilities at lower level of health services delivery have inadequate storage space and storage equipment; and experience shortage of qualified pharmaceutical staff which affects forecasting. The access to quality, safe, effective and affordable medicines at community level has been boosted by the introduction of ADDO. The coverage of each antigen of EPI vaccines is over 80% which is about to hit the NSGPR target of 85% coverage. However, data shows that there has been a slippage in coverage of DPT-HB3 from year 2004. There is need to improve availability of medicine, equipment and medical supplies at lower level of health services delivery. There is need to improve coverage of EPI vaccines among children under one year of age and the women of childbearing age. In order to strengthen the achievement of the reforms through D by D, it is necessary to develop and implement innovative capacity building strategies, resource mobilisation, strengthen educational, economic and political empowerment of women, support

by way of policy and legislation. The programme must become more outward focused, including strengthening its networking and develop more effective ways of achieving greater prominence, influence, acceptance, negotiating strategies and impact on key decision makers at all levels through a coherent and effective communication strategy that will provide an effective link among various stakeholders. There is a need for regulation of the health insurance industry so as to be able to get a consistency between the different schemes i.e. NHIF, SHIB and many others. Community Health Fund (CHF) coverage needs to be expanded to the rural areas around the country, as it is recommended way of funding health service provision especially for rural poor. Improve information and sensitization in order to ensure that the population is cognizant of the availability of free health service provision for some groups while at the same time acknowledging the continuous challenges that the sector confronts in the areas of funding and human resources for health. The government needs to continue develop and increase capacity of medical personnel especially in rural located government health facilities. In order to considerably reduce maternal and newborn deaths it is recommended to strengthen the health system and increase coverage of maternal, newborn, and child health interventions such as skilled attendance during childbirth, emergency obstetric and neonatal care and family planning services, as well as improving socio-economic status of women through education and economic empowerment. This review has also shown that climate change threatens to slow, halt or reverses the progress Tanzania is making to achieve its NSGPR. It is therefore important that the country prepare itself to appropriately address its impact. Improved risk assessment is necessary to inform decision makers on health impacts from climate change and that it is important that all stakeholders including the community, are engaged in a process to update and adapt priorities, mobilize resources and build interdisciplinary research and implementation capacity on climate change and its mitigation.

BACKGROUND AND TERMS OF REFERENCES

Background

Tanzania's national strategy for growth and reduction of poverty (NSGPR) has been the national guiding framework for growth and poverty reduction in the second half of 2000s. These second generation PRSs generated a strong agenda, aiming at sustaining broad-based growth whilst emphasizing improvement in quality of life and social wellbeing as well as equity and good governance.

Substantial progresses have been made in improving social services (NSGPR Cluster II), but there are issues of concerns, especially in the health sector. The concerns are based on the evidence which shows that while Tanzania has made significant progress in reducing infant and child mortality and some progress in aspects of child malnutrition, however, the sustenance of these progresses depends much on the coverage of interventions. Despite the progress registered there is little progress in reducing neonatal and maternal mortality.

There is also a concern raised by climate change and the environment, which has lead to two significant effects (i) threats of outbreaks of new diseases such as SARS, Avian flu, Ebola, and swine flue, resurgence and resistance to common medicines of tuberculosis, and other diseases and (ii) increase in neglected disease burden which as foothold in the environment and especially water bodies and agricultural plantations such as bilharzias, river blindness, typhoid fever, worm infections, etc. It includes failure to link upfront the new epidemics and zoonosis with climate change. It is urged that these concerns relate to problems around issues of availability of recommended mix of resources and skills in the health sector and the constrained posed by shortage of health professionals and other resources.

Government plans to continue the expansion of health facilities in order to increase availability, access and equity concerns to address Millennium Development Goals (MDG) 4, 5, and 6. But so far many challenges are posed by such expansion, in terms of running and maintenance costs and above all, the recommended mix of health infrastructure, medical supplies, and human resources. The government budgetary burden can be lessened and expansion continued if non-traditional financing mechanisms can be expanded, regulated, and sustained. To address these concerns, the current health Sector Strategic Plan III needs to be up-dated on which areas need up-scaling of the on-going interventions and which new approaches should be put in place. The impact of climate change on the population through new and unexpected epidemic zoonoses, and the increase of neglected endemic diseases need to be measured and mitigated.

Objective

To improve the availability of the required mix of services at various levels of the health system to ensure quality of health service delivery and their consequences on the health outcomes and also to mitigate the impact of climate change on the health of the population by putting in place mechanisms to respond proactively against the epidemics.

Scope

1. To assess the status of implementation of Primary Health Service Programme (MMAM)
2. To assess the status on equipment, vaccines, medicines, and supplies at lower levels of health delivery system

3. To explore further roles to be played by the devolution of responsibilities for health facilities and health planning to Local Government Authorities
4. To explore the potential of different health financing options (e.g. through the use of cost-sharing mechanisms, user fees, and risk pooling arrangements) in increasing coverage of the utilisation of health services, improve quality and ensure sustainability.
5. To explore the issues behind little progress in some health indicators e.g. maternal and neonatal mortality and suggest a practical way forward to come to workable solutions
6. To address the impact of climate change on the health sector
7. To provide a set of recommendations and proposed way forward.

This review focuses on how on track Tanzania is in achieving phase 1 of the National Strategy for Growth and Reduction of Poverty which comes to its end in 2010.

CHAPTER 1: STATUS OF IMPLEMENTATION OF PRIMARY HEALTH SERVICES PROGRAMME

Summary: In 2007, the government of the United Republic of Tanzania has launched the Primary Health Care Services Development programme as one of the renewed efforts to effectively engage the health sector in poverty reduction strategies. While the connection of health sector and poverty reduction efforts have been well established in various government policy documents and the development literature, not much is known in Tanzania about the contribution of the primary health care programme in meeting the NSGPR targets in particular and the MDGs in general. The main objective of this review chapter is thus to present the findings of an assessment of the status of implementation of the PHC programmes in terms of its achievements and challenges towards realising its original goals. The statuses of the necessary inputs/ resources for implementing the programme are discussed with gaps identified and policy recommendations provided. The analysis of data presented in this chapter is based on review of government policy documents, published and unpublished literature from studies conducted in Tanzania and internationally. The literatures were categorized based on two criteria: a) whether they address the general issues on primary health care or b) if they particularly discuss the particular issues of contribution of primary health care in relation to poverty reduction. Thematic content analysis was used to synthesize the collected data. Findings from the analysis indicate that quality of health care both professionally determined and as perceived by users have seen some improvement. In relation to this, reports indicate that ability to deal with such diseases as malaria, implementation of vitamin supplementation programmes, drug supply to facilities and health workers attitude to provide care have improved to satisfactory levels. In addition, health workers have been trained in many districts to implement such programmes as IMCI, services for PMTCT have been improved and expanded throughout the country. Government funding has also been incrementally although still below the Abuja commitment. There have also been some improvements in maternal health services, Tuberculosis treatment services, immunisation coverage has improved over the year with a corresponding reduction in under five mortality rates. Insecticide treated nets coverage and utilisation among children and pregnant mothers has also improved over the years. Generally, the HIV prevalence rates have been reported to be declining due to integrated implementation of a number of health programmes under the auspices of PHC framework. In spite of these notable improvements, the analysis has highlighted some obstacles which might potentially hinder the smooth implementation of the PHC programme or reverse the benefits achieved so far. One of the critical challenges is inadequate human resources both in terms of numbers and the necessary skills to implement health programmes. Health workers are unevenly distributed with remote and rural districts being the most disadvantaged. Inadequate funding is another problem that has featured in almost all the reviewed policy documents. This shortage has compounded the existing problem of inequities in accessing and utilising health care services whereby the poor and vulnerable groups are the most affected. Important also is a narrow window of enforcing public private partnership in financing and delivery of health care services. Evidence provided in this report indicate that private health facilities are concentrated in urban areas while more than 70% of Tanzanian population reside in rural areas with higher burden of poverty, diseases and other public health problems. Details of other challenges are described in the main text. The chapter concludes by acknowledging that few years since its inception, the implementation of PHC programme has shown some promising signs of being capable of realising its original objectives. However, this will only happen if the highlighted health system's capacity constraints inherent in the process of implementation are adequately addressed and ensure that strategic partnerships between the government and non-governmental actors (including the private sector) are strengthened or revitalised.

BACKGROUND

The common focus shared by both the Primary Health Care (PHC) approach in implementing health programmes and the National Strategy on Growth and Poverty Reduction (NSGPR) in Tanzania centres on three key issues identified as: (i) an emphasis on improvement of quality of

life and social well-being; (ii) good governance and accountability through informed community participation and; iii) an emphasis on multi-sectoral linkages and synergies. Under such a framework, both the goals of PHC programmes in particular, and those of NSGPR in general are thought to be realized when cross-cutting issues are mainstreamed and dealt together. In Tanzania, series of poverty and human development reports have provided information about the progress and obstacles towards the targets of poverty reduction. An increasing investment in priority sectors such as health and education has thus consistently featured in these reports as one of the optimal strategies towards reaching the country's NSGPR targets in line with the MDGs. However, there is little data on monitoring the success and or failures of the PHC programme in Tanzania in relation to both achieving the national health policy goals and its expected contribution to poverty alleviation strategies.

Thus, in order to conclude on whether the implementation of PHC programmes are a success or failure, it is worthwhile to understand whether the required resources are adequately available, appropriately deployed and are sustainable. In addition, an understanding of whether these resources are equitably distributed and that the implementation process is effected within the framework of an optimal organization structure with good management practices, is equally important. Noted, is the goal of PHC programmes on improving access (coverage) to health services among Tanzanians and contribute to their efforts towards a decent life without poverty. Except for discussion of equity in PHC financing which has been dealt in other sections of this report, all the above raised issues are discussed in detail in this part.

As part of the major report, this chapter presents results of the assessment of the implementation of PHC programme in relation to its potential contribution towards poverty alleviation efforts in Tanzania. It also discusses about the required resources needed to effectively implement the programme and whether they are adequately deployed and equitably distribute relative to needs. Opportunities, challenges and the way forward are discussed at the end of the chapter. The data used for this analysis and discussions presented in this chapter were derived from a review of policy documents, published and unpublished literatures both from within Tanzania and internationally.

HISTORICAL OVERVIEW

Primary health care as a concept and a tool for planning started to enjoy an elevated emphasis after the declaration of Alma-Ata in 1978. Before 1978, countries in the world including Tanzania had already started to implement different forms of PHC. As a concept, PHC was defined as “essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain at every stage of development in the spirit of self-reliance and self determination” (http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf).

There are common experiences in many countries, including Tanzania, regarding the conceptualization and design of the PHC programmes. More often than not, PHC has been conceived as ‘level’ of care than a tool for health planning towards improving people’s quality of life. With the onset of the implementation of health sector reforms and particularly decentralization reforms in the health sector, PCH has metamorphosed to becoming a tool of health sector planning (Cueto, 2004, Chatora & Tumusimwe, 2003). In this framework, PHC is a tool to foster community participation in health planning, increase transparency and

accountability in the management of health affairs by and for the people whose needs for health care are greatest. It should however be noted that, none of the objectives of decentralization reforms was to create a new form of inequity by sidelining the better off in terms of their health care access and utilization relative to need. Nevertheless, from early to mid-1990s, the implementation of many PHC programmes have moved away from being comprehensive as recommended in the Alma Ata Declaration to becoming selective. This has been championed by the UNICEF and World Bank based largely on cost effectiveness evidence (Cueto, 2004) and ignoring the basic principles of PHC which emphasized comprehensiveness, responsiveness and multi-sectoral collaboration. Most of the programmes that emerged after this period were, vertical- disease specific and the definition of health presented by the World Health Organisation was by default (if not by design) narrowed to emphasize more on curative biomedical models of care than the participatory approaches towards prevention of diseases and health promotion (WHO 2008, Chatora & Tumusimwe 2003).

The original version of PHC as announced in the Alma-Ata conference in 1978 strongly emphasised that all PHC health programmes should be implemented ‘comprehensively’ to reflect the notion that, the pursuit of achieving good health is not just a fight against diseases but a coordination of efforts and resources from different players in order to improve the overall social wellbeing (Cueto 2004 and WHO, 2008). From mid 1990s, the PHC approach as embraced by the ‘comprehensiveness’ proponents was soon described as too broad and unrealistic (Cueto, 2004).’ It was thought that the broad-based approach to diseases and public health problems was not the optimal way to reach the goal of health for all. Following this, selective primary health care was introduced as the name for a new approach towards planning and implementing PHC programmes. The focus of selective PHC was on packaging low-cost technical interventions that were appropriate to tackle the main disease problems of poor countries. Championed by the UNICEF and the World Bank following the 1993 famous report *Investing in Health* (World Bank, 1993), the design and implementation of primary health care interventions by emphasizing on specific diseases and health programmes that were proven to be cost-effective. This approach had by default, downplayed the equity concerns which were at the core of comprehensive primary health care programmes as stipulated. The four best interventions based on cost-effectiveness evidence were advocated throughout the developing world. They were: growth monitoring, oral rehydration techniques, breastfeeding, and immunization, famously abbreviated as GOBI (Cueto, 2004).

The four interventions were seen to be easy to monitor and evaluate, in addition to being measurable as they were said to have ‘clear targets’. Funding appeared easier to obtain because indicators of success and reporting could be produced more rapidly. In the next few years, some agencies added food supplementation, female literacy, and family planning (FFF) to the acronym GOBI, creating GOBI-FFF (Cueto, 2004, Avery, M.E. & Snyder, J. (1989)).

In Tanzania, the home grown version of the PHC was largely shaped by the post-independence nationalistic policies that from the very beginning identified three enemies of development namely ignorance, diseases and poverty. The year 1967 was very momentous especially following the pronouncements that formed the cores of the Arusha Declaration (Kumaranayake et al. 2000). Thereafter the PHC programmes were implemented as a response to this policy framework. The strategy was perceived as an engine to fight poverty and bring an inclusive development for all Tanzanians. To increase coverage of health services equally to all who are in need, the country committed itself to a policy of providing free health care services at the point of use. However, by the late 1970s and early 1980s Tanzania experienced deepening economic and social crises, with profound implications for financing and delivery of social services (Munishi, 2003; Kumaranayake et al., 2000). In addition, the World Bank’s structural adjustment

conditionalities had in 1985-1986 pressured Tanzania to embark on a radical policy shift towards implementing economic and civil service reforms with a strong emphasis on 'efficiency' in the management and delivery of social services (Munishi, 2003). The immediate consequences of these reforms were among others, substantially cutting down government spending on social services (including health) and down-sizing or euphemistically, 'right-sizing' the public service bureaucracy (Munishi, 2003). Following this, resources for health sector had been substantially reduced with expenditure per capita falling by 46% by the end of 1980s (Kumaranayake et al., 2000). The public sector employment freeze of 1993 which was however lifted ten years later, have had serious implications for recruitment of health professionals needed to implement what the World Bank believed to be 'cost-effective' health interventions.

Thus, in order to evaluate the status of implementation of the PHC programme in Tanzania and particularly its potential contribution to poverty reduction efforts, the highlighted historical reflections are critical to the understanding of the design and implementation of the programme, assess the successes, failures and the reasons attributable to these outcomes.

The relationship between health and poverty has been established in the literature and the consistent conclusion emerging from many studies is that the two relates in vicious cycles (Acknowledging this fact, United Nations and all governments of the world have since 2000 announced that health improvement must be one of the crucial aspects in countries' efforts to realise the overall Millennium Development Goals (MDGs). In fact, three of the eight Millennium Development Goals address health issues. In Tanzania, series of Poverty and Human Development Reports (PHDR) have provided information about the progress and obstacles towards the targets of poverty reduction in Tanzania (URT/PHDR, 2005). Increasing investment in priority sectors such as health and education has thus consistently featured in these reports as one of the optimal strategies towards reaching the country's poverty reduction targets in line with the MDGs.

CURRENT SITUATION OF THE IMPLEMENTATION OF PHC PROGRAMME IN TANZANIA

The Primary Health Care Programme was launched in 2007. The programme had a number of milestones that were to be reached in order to make sure that the provision of quality health services does not only improve health of the population in its own sake but also contribute to achieving the NSGPR goals. The outlined PHC programme priorities below are thus the indicators for assessing its implementation status, achievement and failures.

Programme priorities

Priority I: Human Resources for Health

- To address the human resources crisis by increasing output both in terms of quantity and quality. The emphasis is to have the right number of qualified, skill mix and motivated staff in right place at the right time.
- Providing attractive incentive package targeting mainly those working in underserved rural and remote areas
- Expansion of training intake, recruitment and create an enabling environment for the retaining the recruited health workers
- The overall objective is to fill the current gap of 68% of required human resources for health in the country

Priority II: Improving District Health Services

- Construction of 3088 dispensaries, 19 district hospitals, 95 maternity waiting homes and 2,074 health centres
- Rehabilitation of 250 dispensaries, 120 health centres and 54 district hospitals
- Construction, upgrading and rehabilitation of 128 training institutions
- Improving/ strengthening communication and referral system for 144 councils in Tanzania
- Improve maternal health by increasing the number and; improve capacity of Emergency Obstetric care facilities

Priority III: Maternal and U-5 mortality

- Reduce maternal mortality from the current 578 to 175 per 100,000 live births (by the year 2017)
- Reduce Under-5 mortality from 112 to 45 per 1000 live births (by the year 2017)
- Increasing births attended by skilled professionals from the current 46% to 88% by the years 2017

Priority IV: Malaria

- Reduce the burden of malaria by 80% by the end of the programme period through sensitization of community members on malaria prevention and control measures at all levels; promoting the use of ITNs and introduction of indoor residual spraying

Priority V: HIV and AIDS

- Increase and strengthen services on care and treatment of people living with HIV and AIDS
- Increase access of services for the Prevention of Mother to Child Transmission (PMTCT) in all health facilities
- Provision of voluntary counselling, home based care services and increase the number of HIV and AIDS patients on ARVs from the current level of 70,000 to 800,000

Priority VI: Tuberculosis and leprosy control

- Reduce prevalence and death rates associated with tuberculosis by 50% by the end of 2017
- Elimination of leprosy as a public health problem in the country.

Priority VII: Non-Communicable diseases

- Promotion of acceptable lifestyles and training of service providers
- Strengthen and improve environmental health and sanitation and hygiene services by formulating and enforcing environmental health by-laws in all villages.
- Strengthen health promotion and education strategies
- Empowering communities to participate in health promotion activities

Priority VIII; Nutrition

- Capacity building for nutrition intervention at district and community levels by recruitment and deployment of staff that will provide technical support and ensure coordination of nutrition programmes and create linkages with other sectors.

Priority IX: Public-Private partnerships

- To sustain and strengthen partnership between the public and the private health sectors.

ACHIEVEMENTS IN TERMS OF HEALTH STATUS INDICATORS

Disease burden

It is reasonable to believe that improving health service quality and access may have a positive impact on health status improvement among users. Tanzania is currently facing significant challenges in meeting the 2010 health related-NSGPR targets in particular, and the 2015 MDGs related health targets in general. Quality of health services, both perceived and professionally determined, is an important entry point to health service utilisation and thus a precursor for positive health outcomes. The recent evaluation shows some indication of improved quality of health services in Tanzania. It is reported that ability to deal with malaria, implementation of vitamin supplementation programmes, drug supply to facilities and health workers attitudes and capacities to provide care, have improved to satisfactory levels (MoHSW, 2008).

In the last few years, there have been notable efforts by the government to ensure that health service coverage is expanded as much as possible to reach all those who face significant access barriers. From 2004 for example, services for PMTCT have been improved and expanded throughout the country; and new protocols for malaria treatment have been implemented and evaluated. In addition, health workers have been trained in number districts to implement a range of life serving health programmes such as IMCI. Government funding has incrementally been increasing in attempts to not only meet the Abuja Declaration, but also improve health care access and utilisation among the poor and other vulnerable groups. Despite these and some notable improvements, there are still continuing disparities in health care outcomes between the rich and the poor and between the remote and urban communities (Mamdani & Bangser 2004; URT 2005; MoHSW/WHO 2007; MoHSW 2008).

Reports and other published literature indicate that there are still geographical inequalities in access to health services in Tanzania attributed to a number of reasons, ranging from inadequate, demotivated and unevenly distributed human resources; inadequate funding and unavailability of other essential inputs such as equipment and poor state of health facilities (Mamdani & Bangser 2004; Manongi et al; 2006, TDHS; 2004/2005). The poor in remote areas faces difficult access barriers due to distance to referral services compounded by poor road infrastructure, formal and informal payments even in services that are supposed to be free at the point of service, to mention a few (Mamdani & Bangser 2004; URT, 2005). The decision by the Ministry of Health and Social Welfare to introduce new resources allocation formula and to increase the allocation of funds for preventive services are in deed positive developments towards increasing PHC service access.

Life expectancy

With life expectancy, which is the most common indicator of the overall population health, 52 years was set as the NSGPR target. In the 2002 population and housing census, the average life expectancy for a Tanzanian was recorded at 51 years (URT, 2005). The demographic impact of HIV/AIDS pandemic might threaten the efforts towards realising this goal

Tuberculosis and Leprosy

The Tanzania National Tuberculosis and Leprosy Programme is one of the most successful programmes in the world. However, the effect of HIV/AIDS might hinder the possible future achievement of the programmes. With regard to the coverage of TB related services, the recent MOHSW performance report indicates that the proportion of TB cases successfully treated (or cured) has risen from the national average of around 80% in 2000 and 2002 to about 82% in 2005 (MoHSW 2008). The tuberculosis notification rate per 100,000 populations was estimated

to be 163 in 2006 and has remained the same in 2008 (162/100,000). The percent of TB treatment success rate (which indicate the number of TB patients who successfully complete treatment as a proportion of TB cases diagnosed) improved from 84.7% in 2006 to 87.7% in 2007. The programme has surpassed the global target set at 85%. On the other hand, the proportion of leprosy case diagnosed and successfully completed treatment stand at 97.2% and 91.7%, respectively (HSPPR, 2009). The use of Directly Observed Treatment (DOT) which is more of a Patient Centred Treatment (PCT) is also been variously credited in a number of research reports and policy document to be one of the main reasons towards success stories in the implementation of TB programme.

Reproductive health

With regard to reproductive health services, among the 7.7 million women aged 15-49 years in Tanzania, 36% have reported to have received modern family planning methods (in 2006) compared to 23% in 2000. In addition 16% were up to 2006 reported as new registered users of modern family planning methods. Provision of maternal health services has also improved although the number of maternal deaths has increased over the years. It is reported that 90% of all the districts have facilities that can provide caesarean section. In addition, health workers have been trained and imparted with safe motherhood skills in at least 50% of all districts (MoHSW/WHO 2007). Communication and referral services for all health problems (including maternal and child health) have also improved. For example up to the time of writing the Service Availability Mapping Report , 80% of districts have reported to have a working land line telephone which facilitate communication and referrals. The co-existence of higher coverage and improvement of (some) maternal health services with the increased pregnancy related deaths might partly be explained by factors related to access barriers and inability of many poor women to break these barriers in times of need for maternal health care services.

Child mortality

According to Masanja et al (2008), the prospects for Tanzania to reduce infant and under-5 mortality towards reaching the MDG targets looks promising. From the 1999 and 2004 (TDHS, 2005), infant and under-5 mortality declined from 99 to 68 and from 147 to 112 per 1000 live births respectively. These estimates exceed the 2003 Poverty Reduction Strategy (PRS) targets and if these can be sustained, the MGDs targets might be realised. It is indicated that much of these improvements might be attributed to improved malaria control measures- through both increased use of mosquito nets and improved curative care by using more effective malaria drugs (TDHS 2005, URT 2005). With all these improvements there still remain huge rural-urban disparities. Rural (poor) children have higher chances of dying before the age of five and if they happen to survive, they are more likely to be malnourished. This pattern might well be explained by rural-urban socioeconomic differences whereby poverty in Tanzania is predominantly a rural phenomenon. More details on this aspect are provided in chapter 5 of this report.

Childhood immunization

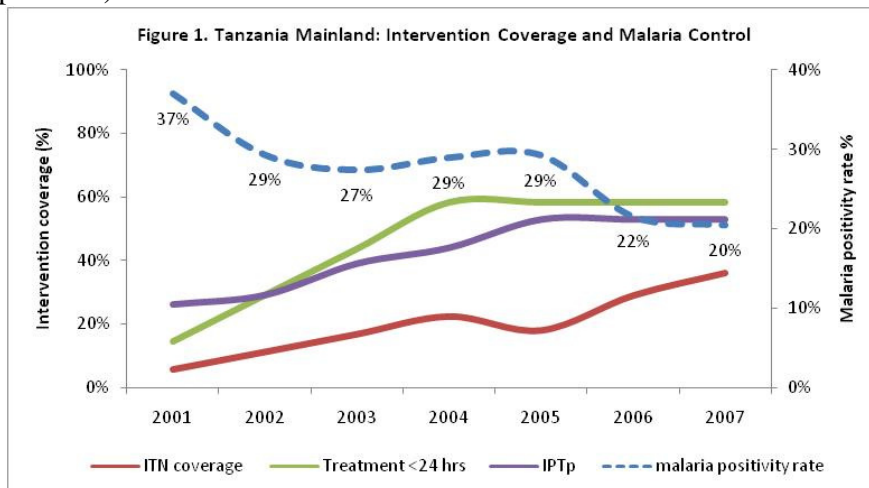
Immunization coverage has also improved over the years. According to the routine EPI data, there have been some positive developments in the period spanning 2000-2004. By 2004, DTP-HB3 coverage reached a peak of 94%. However, this was followed by a steady decline to 83% in 2007. Data from EPI programme for 2008 shows a 3% increase in coverage to 86%. Accordingly, the latest recorded figure of 83% is apparently below the NSGPR target of 85% (MoHSW, 2008). However, overall, Tanzania is performing much better in immunisation coverage compared to its neighbours in the region. Chapter 2 of this report provides a detailed description on vaccines and issues of immunization.

Morbidity and mortality due to Malaria

The NSGPR target for prevention and control of Malaria is to reduce morbidity and mortality due to Malaria by 50% by the year 2010. However, there are no data to concretely ascertain the level that existing malaria interventions have achieved in reducing Malaria morbidity and mortality in line with the set targets.

Service provision for malaria prevention and control has also shown some improvements in terms of coverage. It is reported that social marketing programmes have penetrated in virtually all districts in mainland Tanzania and the number of households using treated mosquito nets have also increased. The proportion of mothers who received two doses of preventive intermittent treatment for malaria during last pregnancy is estimated at 57% (THMIS, 2007-07). The proportion of pregnant women and children <5 years, sleeping under an insecticide treated net (ITN) is 27% and 26%, respectively.

Data reported by the Tanzania National Malaria Control Program (NMCP) demonstrate increasing program coverage and reduced burden of malaria in Tanzania. Between 2001 and 2008, the use of IPTp in the last pregnancy more than doubled, prompt treatment of young children nearly quadrupled, and ownership of ITNs increased nearly seven-fold (Figure 1). At the same time, the malaria positivity rate (percentage of blood samples found to contain parasites) declined from 37% to 20%.



Source: National Malaria Control Programme

Core indicators for ITNs recommended by the Roll Back Malaria (RBM) Partnership include proportion of households with at least one ITN; proportion of children under five years old who slept under an ITN the previous night; and proportion of pregnant women who slept under an ITN the previous night (TMIS, 2008). The Tanzania NMCP has set targets of 80% coverage for each of these indicators. A sizeable proportion of bednets in use in Tanzania are not treated (Mboera et al., 2008). While not as effective as ITNs, these bednets still provide some protection to individuals who sleep under them.

Recent four nation-wide surveys found substantially lower household ownership of ITNs than the NMCP target of 80 percent. Estimates of household ownership of at least one ITN ranged from a low of 29% of all households (Mboera et al., 2008) to a high of 57% (NMCP, 2008). Household reporting ownership of any net also varied between surveys from 56-77%. The proportion of children less than five years of age reported to have slept under an ITN ranges between 35 and 54% for any type of net and between 25 and 32% for ITNs. One of the surveys

reported a comparatively high percentage of children using any net (74%) or an ITN (48%). Use of ITN by pregnant women is still low with only 52% and 30% of all pregnant women using any net and ITN, respectively.

Morbidity and mortality due to HIV/AIDS

The available survey reports indicate that there have been recorded declines in HIV+ rates between 2003/2004 and 2007/2008. HIV/AIDS is more prevalent among women than men. For HIV/AIDS service provision coverage, the available data indicate that by the year 2006 Anti Retroviral Treatment (ART) services were reported to be available in 65% of districts which had at least one health facility capable of offering these services. A quarter (25%) of districts reported to have two or more ART facilities (MoHSW/WHO,2007). By the end of 2007, a total of 80,628 persons with advanced HIV infection were receiving ARV combination treatment. By the end of May 2009, a total of 248,280 persons were receiving ARVs, which is a significant increase of 32%. In addition, PMTCT services are available in 84% of all districts while HIV/AIDS counselling and testing is now more widely available. For example two-thirds of the districts in mainland Tanzania are reported to have at least four service delivery points for counselling and HIV testing. About 34% of the HIV positive women were receiving ARVs to prevent mother to child transmission in 2007 (NACP, 2007). The proportion has increased to 55% by the end of 2008.

Table 1.1: Number of CTC and estimated number and coverage of clients in need of HIV care and treatments by region, October 2004- December 2007

Region	No. CTC	HIV prevalence	Estimated PLHIV	Estimated AIDS patients	No. enrolled in HIV care	% Estimated PLHIV in HIV care	Patients on ART	%estimated AIDS on ART
Arusha	15	5.3	78,791	15,791	6,143	8	4,790	30.4
Pwani	7	7.3	69,724	13,945	2,056	3	1,100	7.9
Dar es Salaam	29	10.9	342,700	68,540	18,784	5	10,283	15.0
Dodoma	8	4.9	93,730	18,746	2,784	3	2,034	10.9
Iringa	16	13.4	250,861	50,172	14,607	6	7,276	14.1
Kagera	8	3.7	84,390	16,878	4,429	5	2,378	14.5
Kigoma	5	2.0	31,375	6,275	1,155	4	912	16.8
Kilimanjaro	14	7.3	159,637	31,927	8,637	5	5,353	15.5
Lindi	8	3.6	32,747	6,549	1,666	5	1,018	12.5
Manyara	6	2.0	24,093	4,819	842	3	600	9.2
Mara	7	3.4	55,104	11,021	1,682	3	1,015	12.5
Mbeya	13	13.5	339,753	67,951	13,750	4	7,816	9.2
Morogoro	13	5.4	109,507	21,901	6,536	6	3,759	11.5
Mtwara	6	7.4	86,933	17,387	3,351	4	2,069	17.2
Mwanza	14	7.2	224,690	44,938	12,548	6	6,195	11.9
Rukwa	4	6.0	87,286	17,457	1,388	2	834	13.8
Ruvuma	8	6.8	94,034	18,807	4,473	5	3,238	4.8
Shinyanga	8	6.5	199,977	39,995	3,221	2	2,552	17.2
Singida	5	3.2	39,761	7,952	2,408	6	1,730	6.4
Tabora	8	7.2	123,106	24,621	5,150	4	2,310	9.4
Tanga	8	5.7	108,584	21,717	7,537	7	4,177	19.2
Total	210		2,636,785	527,357	123,147	5	71,439	13.5

Source: Somi et al. (2009)

By December 2007, a total of 210 health facilities were offering HIV/AIDS care and treatment services in the country (Table 1). The majority of these facilities are located in Dar-es-Salaam region 29 (13.8 %), followed by Iringa: 16 (7.2 %), Arusha 15 (7.1 %). Kilimanjaro and Mwanza each had 14 (6.7 %), while 13 facilities are located both in Mbeya and Morogoro (6.2 %). These seven regions have 53.9 % of all the facilities offering care and treatment of HIV /AIDS in the country. Rukwa region has the lowest number of facilities 4 (2%), (Table 1). Most, 147 (60.5%), of the facilities are owned by the government, followed by those owned by Faith Based

Organizations (FBO), 63 (30 %) and private institutions, 20 (9.5 %). The analysis of the facilities according to levels show that majority 179 (85 %) are hospitals, followed by health centres 24 (12 %) and dispensaries 7 (3 %).

As of December 2007, the estimated number of people living with HIV infection in Mainland Tanzania was 2,636,785, of whom 123,147 (5 %) were enrolled in the HIV care programme. About half (48.5%) of the patients were enrolled in Dar es Salaam, Iringa 14,607, Mbeya, and Mwanza. Similarly as of December 2007, the cumulative number of AIDS cases was estimated to be 527,357, of whom 71, 439 (13.5 %) commenced ART (Somi et al., 2009). The proportion of all estimated AIDS cases that actually commenced ART ranged from 4.8% in Rukwa to 30% in Arusha.

Between 2004 and 2007, the total number of patients on who commenced ART was 71,439, of which 44,176 (63.8%) were females. The number of patients on ART was 488 clients in 2004 and the number increased to 33,268 by 2006 and then decreased to 15,934 in 2007.

During the four years of implementation of HIV care and treatment services in Tanzania, there has been a number of achievements in terms of increased coverage, number of patients accessing services, staff capacity building and infrastructure of the health system. Nonetheless, a number of challenges need to be addressed in order to continuously improve the quality of HIV care and treatment services in the country. These include: a) strengthen the recording and reporting system to ensure regular, complete and timely reports b) strengthen co-ordination of various stakeholders involved in patient monitoring c) training and retraining of staff involved in recording and reporting d) ensure regular supportive supervision at all levels e) conduct operational research in the area of HIV care and treatment and f) organise mid term evaluation of the recording and reporting system (Somi et al., 2009).

Non-communicable diseases

Non-communicable diseases were also among the milestones that the primary health care development programme planned to address. The burden of non communicable diseases (diabetes, cardiovascular diseases, cancers, nutritional disorders, etc.) is reported to be rapidly increasing in Tanzania at the time when the health sector is ill-prepared. The aim of the programme was to increase awareness on the prevention and control through health promotion interventions and improvement of treatment at the facilities. Access to information about the seriousness of the disease (in terms of their associated morbidity and mortality) is likely to have not reached the majority of populations in Tanzania due to capacity weaknesses inherent in health education and promotion interventions. In addition, mortality associated with these diseases will likely to be enormous in the near future due to the fact treatment capacities are weak due to inadequate resources (human and equipment) in most of the health facilities in the country. The reviewed document do not provide data on status of implementation of health promotion programmes which are in deed very crucial in addressing many of non-communicable diseases

Nutritional related health status

Nutritional status is also an important indicator for monitoring health status improvement among children. Nutritional status is normally reflected in such indicators as weight- for- height and weight –for-age. Weight for age is an indicator which describes the current nutritional status of children. Wasting which is one of the parameters of poor nutritional status, may be caused by the failure to receive adequate nutrition or repeated episodes of illnesses (MoHSW, 2008). The NSGPR target has set to reduce wasting to 2% in 2010. The TDHS (2005) indicate that wasting

among under-5s has decreased to 3% compared to an average of 5% to 7% recorded throughout the 1990s.

Weight-for-age is a useful clinical indicator for assessing continuous assessment of children's nutritional progress and growth. NSGPR has not set a specific target for reducing under weight among Under-5s and thus difficult to monitor progress (MoHSW, 2008). However, it is shown in the 2004/2005 TDHS that 22% of Under-5 children were moderately under weight compared to 30% in the 1990s. It is further indicated that 3.7% of children under the age of five years were severely under weight. These data indicate a somewhat rosy pattern of improvement but more efforts need to be employed.

Infrastructure

According to the recent service availability mapping report (MoHSW/WHO, 2007), health facilities in Tanzania are concentrated in rural areas although this pattern does not correspond with the distribution of health workers. Following the ongoing implementation of health sector reforms and expansion of health services in rural areas, access to health services is believed to have been increased over the last few years with the majority of people reported to be within an average of 5 kilometres from the nearby health facility.

If we perceive PHC a 'level of care', the Tanzanian health system follows a strict pyramidal referral structure with dispensaries being at the lowest level in the pyramid. Dispensaries are designated to serve between 6,000 and 10,000 people. A health centre, the first referral point from dispensaries, serves about 50,000 people in its catchment area. Above this level are district and regional hospitals which provide more or less similar services except that there are more medical specialists at the regional hospital level than at the district level. On top of the pyramid, there are four tertiary/ specialist hospitals of which two are owned by faith based organisations and the rest are owned by the government.

The MoHSW 2005 statistical report has indicated that in mainland Tanzania there are 4679 dispensaries of which, 3038 are government owned. In addition, there are 331 government owned health centres. There are also 219 hospitals of which 40.6% (89) are owned by the government. The rest of health facilities are owned by faith based organisations, private sector and parastatal organisations (Table 1). Total number of health facilities has increased by 11.3% from 2001 (4990) to 2006 (5552).

Table 1.2: Number of health facilities in mainland Tanzania, 2001-2006

Year	Public	NGO	Private	Parastatal Organization	Total
2001	3060	748	977	205	4990
2005	3456	952	809	163	5379
2006	3696	931	739	186	5552

Source: Service Availability Mapping (SAM) Report, WHO/ MoHSW Tanzania, 2007

Without considering the type of health facility, Tanzania mainland has an average of 1.5 health facilities per 10,000 people, a figure which is comparable to Namibia and Zambia in Sub-Saharan African region (MoHSW/WHO 2007). The Lake zone regions of Kagera, Shinyanga and Mwanza have the lowest number of health facilities per capita.

Human resources

In 2006, the Ministry estimated that a total of 82,300 skilled health professions were required compared to 29,100 who were actually available translating into a shortfall of 65%. The cadres

that are characterised by severe shortages include medical doctors, radiographers, clinical officers, nurses, and pharmacists. The status of health workers by cadre as by 2009 is shown in the table below:

Table 1.3: Status of health workers by cadre in Tanzania Mainland

Cadre	Establishment	Available	Deficit	% Deficit
Specialist doctor	229	96	133	58.1
Nurse/NW/PHN	20,373	9241	11132	54.6
Radiographer	197	97	100	50.8
Clinical officer	11,316	5655	5661	50.0
Pharmacist/Technician	621	311	310	49.9
AMO/ADO	2,407	1295	1112	46.2
Health officer	1,823	990	833	45.7
Lab Technician	821	480	341	41.5
Asst/Clinical Officer/ MCHA	760	451	309	40.7
Medical Doctor	748	469	279	37.3
Nursing Officer/PHNA	6,559	4381	2178	33.2
Health Secretary	269	196	73	27.1
Medical Attendants/Others	24,154	18891	5263	21.8
Total	70,277	42553	27724	39.4

Source: CCHP Performance Report (2009)

Tanzania has been described to be among the countries in the world with the lowest health personnel per capita. According to World Health Report (WHO,2006), the ratio of health personnel with advanced clinical skills (medical doctors and specialists) is 0.02 per 1000 population, the lowest in the world. There is an emerging body of evidence pointing to the linear association between the availability and equitable distribution of health personnel with some important health status indicators. In addition, availability of qualified health workers who are effectively motivated and evenly distributed has recently been concluded to be one of the key inputs towards reaching Millennium Development Goals (Anand & Bärnighussen 2004). In a multi-country econometric study, Anand & Bärnighussen (2007) have found that areas with lower health worker density are associated with lower immunisation coverage and higher under-5 mortality. In Tanzania, a study has shown that districts which had higher numbers of under five mortality were also characterised by an even fewer health workers per capita (Munga & Mæstad, 2009). It is thus reasonable to conclude that availability and equitable distribution of health workers is a crucial health system's ingredient for ensuring a wide coverage of quality health services in particular, and health status improvement in general.

The September 2007 Joint Annual Health Sector Review has set aside milestones to be achieved in order to address the human resources for health crisis in Tanzania. In collaboration with stakeholders for health sector development, a 'special rapid recruitment initiative' was launched and was meant to address HRH shortages in remote and high HIV/AIDS prevalent districts. It was envisaged that by the end of September 2007, 176 health workers would have been recruited and posted to where they are mostly needed. By the 21st of September 2007, 121 health workers had been posted and reported in 19 districts (MoHSW, 2008).

Another milestone was to fill the 80% of the funded posts in the 2006/2007 financial year. In this period, the Ministry of Health and Social Welfare got an employment permit to recruit 3,890 health workers to be distributed all over the country as per submitted needs from each district council. It is reported that by 30th of June 2007, a total of 3,699 (about 95% of total funded posts) health workers were posted to different regions and districts (MoHSW, 2008). A survey of 46 districts later on indicated that only 64% of the recruited health workers reported to their work destination and sooner or later, 12% of the reported health workers had left (MoHSW, 2008).

This rapid recruitment strategy is a commendable move towards the right direction. However, if it is to effectively address the shortage of health workers in the earmarked areas, it should be backed by effective incentive and retention strategies in order to make health workers stay longer in places where they are deployed. This indicates a serious lack of effective health worker retention strategies in the country's health sector.

Although the FBOs/NGOs contribute about 40% of health service provision in Tanzania, it has over recent years experienced difficulties in attracting and retaining health workers. There has been an exodus of health workers from FBO/NGO sector to public sector due to among other things, pay rise and slight improvements in working conditions in the latter. It must be noted that, the private sector in rural areas is pre-dominated by NGO/ and Faith Based Organisations (FBOs). Thus, the tendency of health workers migrating from this sector to the public sector might potentially (negatively) affect the private sector's contribution to the health of rural communities which is contrary to the expectations envisioned by the Public-private - partnership architecture.

There is still a problem of poor distribution of the available human resource. Some areas have a shortage of more than the double of the number of health workers per 10,000 population compared to others. Kagera, Shinyanga, Tabora and Kigoma are the most affected regions. In addition to regional variations, the distribution within regions and within district is also uneven. The less popular districts and the most remote health facilities are especially disadvantaged. Remote districts which have the lowest (overall) health workers per capita are also characterised by fewer skilled health workers suggesting a skill-mix misdistribution between the remote and urban areas (Munga and Mæstad, 2009). The inequitable distribution of human resources for health is likely to persist until a workable incentive package is operational to motivate health workers to serve in less popular districts and villages. In spite of a broad consensus and evidence that such measures are needed, there has been slow progress in designing effective interventions to address the problem.

Amidst these shortages and inequitable distribution of health workers, the crisis of human resources for health is further compounded by low motivation and productivity, higher attrition rates due to among others HI/ AIDS, and out migration to other lucrative health care labour markets (Mæstad, 2006; Dambisya, 2007). The reviewed documents have not clearly indicated the presence of feasible incentive package that will motivate health workers, retain them in underserved areas and ultimately equalise the distribution of health personnel relative to health care needs. In addition, remote poor districts are experiencing difficulties in attracting qualified health workers needed to deliver PHC interventions. However, the partial re-instatement of centralised recruitment of health workers in the context of ongoing decentralising reforms has provided a promising approach of recruitment whereby the central government plays as the facilitator while the local governments own the needs identification and planning processes. Because of these, there is some indication from published evidence that even the hard to staff areas are getting the required skilled health workers, although not to the level of meeting all the requirements (Munga et al, 2009).

Financing

Since the inception of the programme, it was envisaged that financing of the programme will cost about 15.4 billion Tanzanian Shillings catered for by such sources as government budget and off-budget sources (user fees, drug revolving fund, National Health Insurance Fund and Community Health Insurance Fund). Contribution from the communities was set to constitute 20% of the overall budget, contributed through voluntary labour and other material inputs for construction of facilities (NSGPR, 2005). Data for monitoring programme financing progress

and disaggregated contribution of each identified stakeholder are provided in chapter 4 of this report.

Implementation process

The implementation of the primary health care development programme is effected within the context of health sector decentralisation reforms which emphasises community ownership through participation in decision making and programme implementation (NSGPR, 2005). Effective implementation process is dependent upon embracing the vitals of the PHC philosophy in policy planning and implementation. Such aspects include community participation, inter-sectoral collaboration and good governance and accountability. These are key to ensuring that adequate resources are mobilised and effectively deployed to implement the health programmes. In addition, presence of good governance and accountability mechanisms will ensure that the created institutional structures of administration are responsive enough not only addressing the health needs of the population, but also to meeting the broad-based poverty alleviation goal.

Right from its inception, the implementation of the primary health care development programme has emphasised the need to involve all stakeholders in line with the imperatives of the ongoing health sector decentralisation reforms (NSGPR 2005; PHCDP, 2007). It was envisaged that community participation will depend on how people at the grassroots are informed and appreciate the programme. No milestones were however set to monitor how and what advocacy strategies will facilitate the achievement of this goal. This will need to be informed by future evaluation studies.

Different roles were identified, with the central government bodies been charged with the responsibility of providing policy guidance, technical assistance to and supervising local governments which are responsible for actual implementation of the programme. At the district level, the Council's Health Services Board (CHSB) is responsible for overseeing the implementation of health services at the district. The Council Health Management Teams (CHMTs), the technical arm of the board, are charged with the responsibility of running the day to day management of health service delivery within their jurisdictions. Below these levels are Ward and Village health committees which organise and mobilise community efforts towards the realisation of the programme goals at the grassroots levels (NSGPR 2005;PHCDP, 2007). At all levels, capacity issues remain a serious challenge for all the stakeholders to fulfil their designated responsibilities.

Public-Private Partnership (PPP)

The milestones set by the programme under this aspect, was to sustain and strengthen partnership between the public and non-governmental stakeholders. The how question, and when we should expect this to be fully realised, is not clearly stated anywhere. However, the policy to revitalise the necessity to involve the private sector in health care provision and financing was already in place since 1991 when the private sector was formally allowed to be a player in the health sector activities.

In Tanzania, private health facilities account for almost 31% of which 14% are owned by Faith Based Organisations (FBOs) (CCHP; 2009). About 90% of the private for profit facilities are concentrated in urban areas where only 20% of the country population resides(NSGPR 2005, MoHSW/URT (2007). Through this initiative (i.e. PPP), it was envisioned that the district health service system, the back bone of the primary health care programme, will be strengthened by involving more non-governmental stakeholders to ensure wider coverage of services. The aim is to give room to tap financial, human and institutional resources and team them up with the limited resources that are at the disposal of the public sector. Future evaluations will need to

longitudinally and cross-sectionally track the actual contribution of the private sector in terms of improving access to health services among Tanzanians. Analysis of specific private sector contribution to specific disease programmes will be quite useful in monitoring private health sector role as a partner in the health sector.

CHALLENGES

A number of reports indicate that there are still geographical inequalities in access to health care services in Tanzania and unimpressive developments in health status indicators. Improved coverage of health service access which in turn is expected to improve overall population health status, are crucial indicators in assessing whether the implementation of PHC programmes contribute to the health related NSGPR and MDG targets. The following are some of the challenges that hinders effective implementation of PHC interventions in Tanzania

Human resources for health crisis, the very objective that the current PHC programme sought to address, has turned out to be the major challenge towards successful implementation of the overall objectives of the programme. Acute shortages in terms of numbers, shortages of the required skills and poor skill mix, imbalanced distribution, low motivation and poor performance, among others, have been eating the vitals of Tanzanian health systems and affected the effective implementation of the PHC programme and its possible potentials to contributing to poverty alleviation efforts.

Recently the government has reintroduced the Rural Medical Aides/Clinical Assistants (RMAs/CAs) cadre in attempts to address the acute shortage of health workers in remote areas. In addition, there are still ongoing discussions on the need to implement 'task shifting' as another strategy to address the human resources for health crisis. From a face value, these moves indicate a positive direction towards filling health worker vacancies in many remote parts of the country. However, a serious challenge that is likely to negatively affect their implementation is related to huge supervisory requirements in order for these new cadres to deliver quality services. In relation to task shifting, there are still no empirical data on its feasibility. In addition, there is no sound data to conclude whether top-down or bottom up task shifting is more (cost) effective and in which particular settings. In whatever ways, task shifting, particularly top-down task shifting which is more logical in settings of extreme scarcity of qualified health workers, will need a lot of supervision from qualified health workers (who are currently not sufficient). In addition, substantial resources will be needed to re-train the lower cadres who will be delegated with new tasks. Review of personnel policies and regulations, restructuring of career paths and revisions of pay and incentives policies will also need to be done in line with or prior to implementation of task shifting. However, given sufficient political commitment and sound empirical data, these strategies can be implemented and might provide positive results. In addition to these strategies, re-employment of '*retired but not tired*' health workers might as well provide a contribution to the human resources crisis in the health sector. Experiences from higher learning institutions have shown that retired health workers can equally contribute towards realising the institutions/organisations core mission.

Economic resources constraints in Tanzania compromises its ability to adequately implement the PHC programmes in order for health sector to make any significant contribution into achieving the NSGPR and MDGs targets. Apparently, the most crucial constraint is an absolute shortfall of resources (human, financial and infrastructural). However, there are still other crucial issues regarding the equity in distribution of these resources needed to implement PHC programmes. In addition, even when financial resources are mobilised by government and donors, still there are 'capacity problems' at district level both in terms of managing human resources and financial

resources . There is lack of effective and accountable systems of management and governance at the district and community levels. Weak institutions at lower levels not only breed low level of local people's engagement in planning and implementation of PHC programmes but also impose communication difficulties between the local and the central government actors.

Inadequately functioning referral system is still a problem although there are ongoing efforts to improve the situation. A inadequately functioning referral system contributes to inequity and further marginalises the remote and poorer communities from accessing quality health services which is at the core of the PHC programme goals.

The Public-private partnership 'window' for improved PHC programme implementation is partially open. That is, there is a bias in the distribution of private health facilities and practitioners towards big urban centres. In essence, the Public-Private partnership in most of rural areas is largely limited to NGOs and Faith Based Organisations (FBOs)

There still remain important analytical gaps regarding how implementation of PHC interventions can significantly contribute to achieving the NSGPR and MDG goals in Tanzania. Effective PHC programme implementation is said to be more effective if it is comprehensive and multi-sectoral. There is, however, an indication that other sectoral ministries and local government levels have not been, for many reasons (including capacity constraints), adequately involved in the planning and implementation of many PHC interventions that are also meant to contribute towards poverty alleviation.

Given the resources constraints and the time-pressure to meet the close deadlines (2010 for NSGPR and 2015 for MDGs), the contribution of PHC programmes to poverty alleviation may not be felt as strong as policy makers would wish to see. Pressure exerted by the need to meet targets has more often than not created tendency to focus much more on core PHC delivery functions without been backed by sufficient evidence linked to PHC contribution to poverty alleviation goals.

There are too much delegations of functions to decentralised local governments. There is quite some evidence that delegating new functions to weak institutions may lead to both ineffective implementation and poor (inadequate) outcomes

With regard to nutritional health, under-nutrition is still high despite some little progress recorded. District and community response levels and actions to address this problem are still inadequate. In addition, there are no designated nutritional focal personnel at the district and community levels, making it virtually impossible to coordinate strategies and actions.

Health education and promotion is believed to be a means of increasing individual and Community participation in health action and thus increase health care access and utilization and ultimately improve health status. The epidemiological transition that has seen Tanzania shouldering an added burden on non-communicable diseases most of which life-style related, may point to an indication that this aspect has not been given its due importance in the ongoing implementation of primary health care development programme.

HIV/AIDS, multi-drug resistant TB and the emergence (with vibrancy) of non-communicable diseases due to a fast running 'epidemiologic transition' are crucial new challenges at the time when the health sector is not fully prepared (due to a number of capacity constraints). Multi-drug resistance (MDR) to rifampicin, isoniazid, streptomycin and ethambutol has recently been reported in Dar es Salaam (Matee et al., 2009). The emergence of multi-drug TB threatens to

reverse the achievement so far achieved. There is unfortunately no clear policy for follow up of patients presenting with MDR, hence increasing the chances to further transmit the strains to the general population.

With regard to malaria, the review of the Malaria strategic plan (2002-2007) has indicated a number of weaknesses for implementing malaria interventions in mainland Tanzania (MTMSP, 2008): The first plan had pegged targets at 60%, in line with RBM's Abuja targets. Evaluation indicated that most of the targets were not attained. Community access to prompt antimalarial treatment within 24 hours was very low. More than half of caretakers of children under five did not take any action within 24 hours from the onset of febrile illness. There were wrong actions taken by caretakers in the home management of fevers in children. Less than one third of total clinical cases of malaria in the country were confirmed. Operational research showed a very large magnitude of malaria over-diagnosis and inaccuracy of malaria microscopic diagnosis. There are reported low percentages of malaria confirmed cases leading to over diagnosis. It is indicated more than 95% of all febrile patients receive antimalarials, indicating a huge potential of wastage of drugs and thus, resources

The National Voucher Scheme steadily raised ITN coverage for the target groups of under five years of age and pregnant women but coverage for ITNs was below 60%. IRS was implemented in one epidemic prone district. Larviciding was done in trial projects. Scaling up of IRS to cover all districts in Kagera region is underway. Coverage for the first intermittent preventive treatment in pregnant women (IPTp1) has reached 65% but IPTp2 only reached 31%. This low coverage has been attributed to late booking, hiccups in the SP supply chain and the verticalization of district capacity training whereby training of providers was done from central level (MTMSP, 2008).

A number of weaknesses have also been identified as regards to malaria epidemics preparedness and response. Lack of district maps for the stratification of malaria transmission patterns to facilitate the management of the early detection system; lack of proper and timely data for early epidemic detection; failure to verify of suspected malaria epidemics at district level; weaknesses in rapid response to malaria epidemics; unavailability of contingent stocks of medicines and insecticides; difficulties in interpreting early malaria warning systems that were introduced in malaria epidemic prone districts; and the shortage of required human resource capacity at regional and district levels.

Behaviour Change Communication (BCC) has equally not been effective as expected. This is due to the fact that the communication strategy had not been implemented due lack of funding; Low technical capacity at national level; Non- functional IEC technical sub committee; Low community and partner engagement on community based malaria control activities. All these constraints have been exacerbated by lack of an effective Monitoring, Evaluation and Operational Research capacities. There are virtually unclear quality control systems for the correct management of malaria at the Ministry of Health and Social Welfare's Diagnostic Unit. There is (almost) absence of strategic actions to address integrated malaria vector control issues. Advocacy actions for malaria control (as is for other diseases) has largely and for many years centred on the national and district (council) levels. Not much has gone down to community levels.

CONCLUSION AND THE WAY FORWARD

In spite of recent large scale efforts to implement the primary health care development programme in Tanzania, coverage of many health interventions and thus, access to health services among the majority of poor is still a little distant goal to be realised. There are a number of health system's capacity constraints contributing to this situation. Human resources, the scarcest resource, remain to be a critical challenge as the deployment of other resources such as finances and equipment largely depends on the availability of adequate, well trained and motivated health workforce. Government funding, which is way too far bellow the Abuja commitment, is yet another issue that needs a quick strategic response if the goal of PHC are to be realised, the NSGPR targets are to be met. The institutional framework under which the programme is to be implemented is still underdeveloped, regardless of huge leaps the health sector reforms have taken to institutionalise community participation and good governance. In order to reduce higher maternal mortality, emergency obstetric care and access to antenatal care and delivery need to be improved. This can be done by improving referral services especially for poor women in remote areas as well as through impact-oriented health education and promotion strategies. Child health status has seen some significant improvements over the years, but more needs to be done. Reports indicate that diarrhoeal diseases and pneumonia kill more children in low income countries than the effects of HIV/AIDS, Malaria and Measles combined. Yet, there is no specific and clear strategy to address these diseases in the current programme design. The inadequate multi-sectoral collaboration is yet another issue. The private sector potentials have not yet fully exploited to make the sector a meaningful contributor to the goals of improving health care access (and health status) and to realising poverty eradication targets. Strategic efforts are now, than ever before, needed to align the efforts and resources of all stakeholders towards a common goal.

RECOMMENDATIONS

- Health personnel are a critical input of the health system. To improve human resources situation in the health sector increased production of health professionals might well provide a long term solution. In a short to medium terms, improving the working conditions, pay and incentives may serve a number of purposes. Firstly, it may help attract and retain health workers in remote and underserved areas. Secondly, it may contribute to health worker productivity (performance) and thus offset the negative effects shortage of workers. Finally and most importantly, the strategy may attract many students to pursuing medical training and may also help suppress the intention of many health professionals to migrate to outside labour markets.
- The Government, through the ministry of health and social welfare need to forge and strengthen strategic alliances with other stakeholders in order to exchange and share resources for a common good: that of financing and delivering health services in the framework of primary health care programme. More engagement of private and other non-governmental stakeholders is needed
- Need to strengthen the skills for designing and implementing health promotion programmes. In the current policy document (Primary health care services development programme document) the health promotion strategies do not clearly feature. Health promotion is crucial both for the control of communicable and non-communicable diseases
- Planning for construction of new health facilities need to be aligned with the production of health personnel or at least be integrated with health human resources planning. Currently, many health facilities are concentrated in rural areas (with serious shortage of workers) while health workers are concentrated in urban areas.

REFERENCES

- Anand S, Barnighausen T(2007) Health workers and vaccination coverage in developing countries: an econometric analysis. *The Lancet* . **369**(9569):1277-1285.
- Anand, S. & Barnighausen, T. (2004) Human resources and health outcomes: cross country econometric study. *Lancet* 364 (9445), 1603-1609.
- Chatora RR and Tumusimwe (2004). Primary Health Care: a review of its implementation in Sub-Saharan Africa. *Primary Health Care Research and Development*. Vol 5 pp296-306.
- Cueto M (2004). The origins of Primary Health Care and Selective Primary Health Care. *American Journal of Public Health*. Vol 94. No 11
- Dominick A and Kurowski C(2005). Human Resources for health: an appraisal of the status quo in mainland Tanzania. Ifakara Health Research Development Centre/ the World Bank/ London School of Hygiene and Tropical Medicine
- Health Sector Performance Profile Report, Mainland Tanzania July 2006 – June 2007, MOHSW (2008)
- HSSP (2008) *Health Sector Strategic Plan III* , Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.
- Mæstad O (2006) Human resources for health in Tanzania: challenges, policy options and knowledge gaps. CMI Report. Bergen: Chr. Michelsen Institute.
- Mammdani M, and Bangser M (2004). Poor people's experiences of health services in Tanzania: a literature review. *Women Dignity Project*, Dar es Salaam Tanzania
- Manongi RN, Marchant TC, Bygbjorb IC (2006). Improving motivation among primary health care workers in Tanzania: a health worker perspective. *Human Resources for Health* 4 (6)
- MMAM/PHSDP (2007. Mpango wa Maendeleo wa Afya ya Msingi. Primary Health Services Development Programme, 2007-2017. Ministry of Health and Social Welfare, The United Republic of Tanzania.
- MoHSW (2007) Ministry of Health and Social Welfare (MoHSW), Health Sector Annual Review Documentation (2007-2009)
- Ministry of Health and Social Welfare. 2008. *Health Sector Performance Profile Report 2008 Update for financial year July 2007 – June 2008*
- MoHSW (2008). Health Sector Performance Profile Report. Ministry of Health and Social Welfare, Dar es Salaam, Tanzania
- MoHSW (2009) Technical Review Meeting: Health Sector Reform Secretariat, Directorate of Policy and Planning, Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.
- MoHSW (2009) PER Update 2008. Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.
- Munga MA, Mæstad O (2009). Measuring Inequalities in the distribution of health workers: the case of Tanzania. *Human Resources for Health* 7 (4)
- Munga MA, Songstad NG, Blystad A, Mæstad O: The decentralisation-centralisation dilemma: recruitment and distribution of health workers in remote districts of Tanzania. *BMC International Health and Human Rights* 2009, 9(9).
- Munishi GK (2003). Intervening to address constraints through health sector reforms in Tanzania: some gains and unfinished business. *Journal of International Development* 15, 115-131.
- TDHS (2004/2005) Tanzania Demographic and Health Survey(National Bureau of Statistics and ORC Macro, Dar es Salaam, Tanzania. .

CHAPTER 2: STATUS ON EQUIPMENT, VACCINES, MEDICINES AND SUPPLIES AT LOWER LEVELS OF HEALTH SERVICES DELIVERY SYSTEM

Summary: Availability of medicines, vaccines, medical supplies and equipment in health facilities is necessary for the provision of quality health services and it is one of the major factors that make patients to visit them for services. This is significantly important particularly at lower level of health service delivery where the majority of Tanzanian population lives and receives health care services. This chapter report the status of medicines, EPI vaccines, medical supplies and equipment at lower level of health service delivery in relation to the attainment of Millennium Development Goals which are translated in the National Strategy on Growth and Poverty Reduction (NSGPR). Information was collected by reviewing health sector evaluation reports, government policies and strategies as well as review of publications through internet search and discussing with officials from Ministry of Health and Social Welfare. The review has found that despite the government introducing different strategies such as Indent System and Integrated Logistic System in place of the push system of pre-determined Essential Drug Programme kit to improve the situation in public sector, still the availability of medicines, equipment and medical supplies at lower level of health services delivery is not satisfactory. Public health facilities experiences often stock-out and there is shortage of equipment such as for surgical procedures, diagnosis, emergency care and storage of data. To the contrary, the supply of medicine and supplies for vertical programs was observed to be excellent. Some of the main reasons contributing stock-outs include: (i) insufficient of drugs budget for health centres and dispensaries, (ii) health facility staff not well trained in forecasting (calculation how much to order) and (iii) delays in procurement and/or distribution by Medical Store Department (MSD). There is accumulating information showing that the availability of medicine and medical supplies in health facilities belonging to Faith Based Organisations (FBOs) to be higher than in government facilities. This partly is based on the flexibility of ordering and procurement procedures because they could buy from MSD, Mission for Essential Medical Supplies (MEMS) and private suppliers. It has been suggested for the government to consider options for alleviating the pressure on MSD by making it possible for health facilities to buy drugs and medical supplies from other approved suppliers. A new system of Accredited Drug Dispensing Outlets (ADDO) programme or Duka la Dawa Muhimu (DLDM) has been introduced focusing on increasing accessibility of improved quality care to the population.

Data show that coverage of each immunisation antigen increased from 50% to over 90% in 2000s of children below one year of age, and it has significantly contributed in reducing mortality among children below five years. On the other hand there is an increase in number of health facilities in the country providing routine vaccination; i.e.; 4072 in 2005 to 4374 in 2008 of which approximately 75% are government-owned and the remaining belongs to non-governmental organizations, religious organizations and private practitioners. Despite the encouraging recorded increase in coverage of EPI vaccines, data show that there has been a steady decrease in coverage of DPT-HB3 from year 2004. Currently, there has been a significant shift in funding for EPI vaccines activities which has affected the implementation social mobilization/village campaigns and monitoring and evaluation activities. In conclusion, overall there have been improvement in supply of medicines, equipment and medical supply in public health facilities, but still there is shortage. In order to realize the MKUKUTA targets, the government of Tanzania needs to improve availability of medicine, equipment and medical supplies at lower level of health services delivery

Background

The health sector has been identified as a priority area in several government strategies and policies including the National Strategy for Growth and Reduction of Poverty (NSGPR) commonly referred to as MKUKUTA in Swahili, the Tanzania Development Vision 2025, and the Tanzania Assistance Strategy (Kimberly Smith . 2004). In the 1990s, the Government of

Tanzania embarked on a health sector reform program, the overall objectives of which were to “improve the health and well being of all Tanzanians with a focus on those most at risk and to encourage the health system to be more responsive to the needs of the people.” The main strategies set forth to achieve this goal include: decentralization of management to districts, hospital reforms, human resource development, improved management of donor funding through a sector-wide approach (SWAP), and exploring alternative financing mechanisms for the health sector. Decentralization was the central tenant of the reform efforts.

The health sector reforms have led to significant changes in health planning and financing. Under the reform guidelines, Council Health Management Teams (CHMTs) and Council Health Services Boards are responsible for planning, supplying, and managing health services at the district level, with guidance and oversight by the Regional Health Management Team (RHMTs). The role of the central level has in turn been reduced to policy formulation, setting guidelines and standards, procurement and distribution, training, and monitoring and supervision.

Under health sector reforms, district councils are responsible for social well being of inhabitants in their location which includes ensuring availability of medicines, vaccines, medical supplies and equipment in health facilities. Different strategies including MAMM and MKUKUTA recognize that availability of medicines, vaccines, medical supplies and equipment in health facilities is necessary for the provision of quality health services; and it is one of the major factors that make patients to visit them for services. Therefore, it imperative that the government through the Ministry of Health and Social Welfare (MOHSW) to maintain uninterrupted supply of the items in the health facilities at all times in order attain the global Millennium Development Goals (MDGs) which are translated in NSGPR. This chapter focuses on reporting the status on equipment, vaccines, medicines and supplies at the lower level of health service delivery where 75% of the Tanzanian population lives and receive health care services. The lower health services delivery system includes health posts, dispensaries, health centres and district hospitals.

The objective was to review the status of medicines, EPI vaccines, medical supplies and equipment at lower level of health service delivery in relation to the attainment of NSGPR targets. Specifically, the chapter attempts to provide a review of the current status of; the implementation of immunization against vaccine preventable diseases and availability of important resources (human, finance, and supplies) under the Expanded Immunization Program (EPI); current planning, procurement and distribution of medicines, medical equipments and supplies for health services in the country; the influence of/relationship between the status of the EPI activities, availability of medicines, medical equipments and supplies on health services in Tanzania

This was a review of findings from health sector evaluation reports and government policy documents. Also the review included published papers and reports from internet search and discussing with officials from the MOHSW. Reviewed evaluation reports included: *Taarifa ya Utekelezaja ya Wizara Kuanzia Desemba 2005 hadi Machi 2009*, April 2009; Health Sector Performance Profile Report 2008, Update for financial year July 2007 – June 2008; In-depth Assessment of Medicine Supply System in Tanzania, 2008, Joint External Evaluation of the Health Sector in Tanzania, 1999-2006, NSGPR Status Report 2006, and Millennium Development Goals Implementation Report 2006. Policy documents reviewed included NSGPR, MMAM, Tanzania National Health Policy, and Tanzania National Drug Policy. Findings of the report are written in two main categories of EPI Vaccines and medicines, equipment and medical supplies. The current situation of the medicines, vaccines, medical supplies and equipment is described below.

EPI VACCINES

Administrative set-up

The Expanded Program on Immunization (EPI) was launched by the World Health Organization (WHO) in 1974. In Tanzania EPI was introduced in 1975 with the primary aim of protecting children from Vaccine Preventable Diseases. The overall goal is to contribute in reducing infant and childhood mortality rates. This is expected to be achieved through high and effective vaccination coverage for all antigens, using quality vaccines. Under a national program manager, the EPI at the central level is responsible for policy formulation, overall strategies and guidelines, planning and budgeting, procurement and distribution, training, monitoring and evaluation. At the regional level, the program is under the Regional Medical Officer, supported by a Regional Cold Chain Officer and a Regional Maternal and Child Health (MCH) Coordinator. At the district level, responsibility rests with the District Medical Officer assisted by the District Cold Chain Officer and the District MCH Coordinator.

Types of EPI Vaccines

It has been clear that the MOHSW has the mandate to provide safe, potent and effective vaccines for all children and women of child bearing age thus contributing to reduction in morbidity, mortality and disability due to childhood preventable diseases. There are two immunization schedules currently in use which targets children under one year of age and the women of childbearing age (15-49 years). The program currently provides immunization with BCG (for tuberculosis), OPV (for polio), DPT-HepB (whooping cough/pertussis, diphtheria and influenza), TT (tetanus), HBsAg (hepatitis B), and MMR/MMRV (Measles) vaccines for all infants, together with TT vaccine for mothers. Schedules for vaccines currently under EPI are shown in Table 2.1.

Table 2.1: Immunization Schedule in Tanzania for under one year and child bearing age (15-49 years) women

Antigens	Number of doses given	Age at which given
<i>Under one year</i>		
BCG	1	At birth
OPV0	1	At birth, 4, 8 and 12 weeks
DPT-HepB- <i>hib</i> 1, OPV1	1	At birth
DPT-HepB- <i>hib</i> 2, OPV2	1	Eight weeks
DPT-HepB- <i>hib</i> 3, OPV3	1	12 weeks
Measles	1	At 9 months
<i>Women of child bearing age (15-49 years)</i>		
TT1	1	Any time in first contact
TT2	1	One month after the 1 st visit (TT1)
TT3	1	Six months after TT2
TT4	1	One year after TT3
TT5	1	One year after TT4

Coverage of immunisation

In Tanzania immunization is offered as part of Primary Health Care (PHC) in all Maternal and Child Health (MCH) clinics, in all the cases attached to a health facility under the Reproductive and Child Health Section. In 2007 Tanzania had a total of 5588 health facilities from which 4704 (84.2%) were eligible for providing immunization service. However, 4289 (76.6% of all the facilities i.e. 91.1% of the eligible facilities) were providing the services. There has been great achievement in number of health facilities providing EPI vaccine with an increase from 4072 in 2005 to 4374 in 2008 (Figure 2.1).

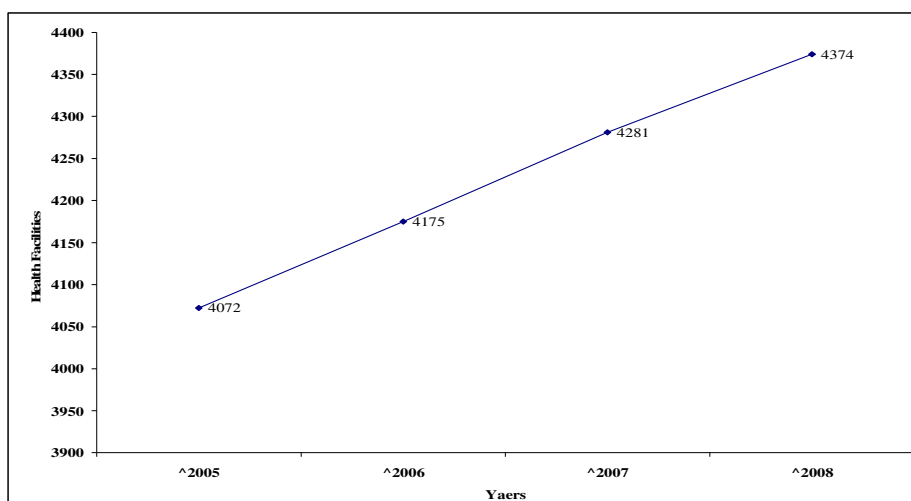


Figure 2.1: Number of health facilities providing EPI vaccines in Tanzania

(Source: Taarifa ya Utekelezaji ya Wizara Kuanzia Desemba 2005 hadi Machi 2009, April 2009)

Interestingly, by 2008, there was an increase reaching a total of 4,374 health facilities providing EPI vaccines in the country of which approximately 75% are government-owned. The remaining belongs to non-governmental organizations, religious organizations and private practitioners (MoHSW, 2009).

EPI vaccines coverage rates is one the indicators of health sector performance which is also part of NSGPR indicators. According to Health Sector Performance Profile Report 2008 Update for financial year July 2007 – June 2008 (MoHSW, 2008), each antigen showed over 80% coverage as presented in Table 2.2.

Table 2.2: Immunization coverage (%) by year in Tanzania Mainland 2000 – 2006

Antigen	Year						
	2000	2001	2002	2003	2004	2005	2006
BCG	86	91	88	94	100	91	89
DPT-HepB3	79	87	89	89	94	90	87
OPV3	64	65	91	91	96	91	89
Measles	78	86	89	90	94	91	89
TT2+	77	76	86	83	88	81	78

Source: MOHSW, Integrated Measles Campaign Field Guide, 2008

Examining the NSGPR (Mkukuta Status Report, 2006) and MDGs (MDG, 2006) targets set for coverage of EPI vaccines of 85% and 90% by 2010 and 2015 respectively it is encouraging that Tanzania is on the right track. However, data shows that there has been a steady decrease in coverage of DPT-HB3 from year 2004 below MKUKUTA targets (Figure 2.2).

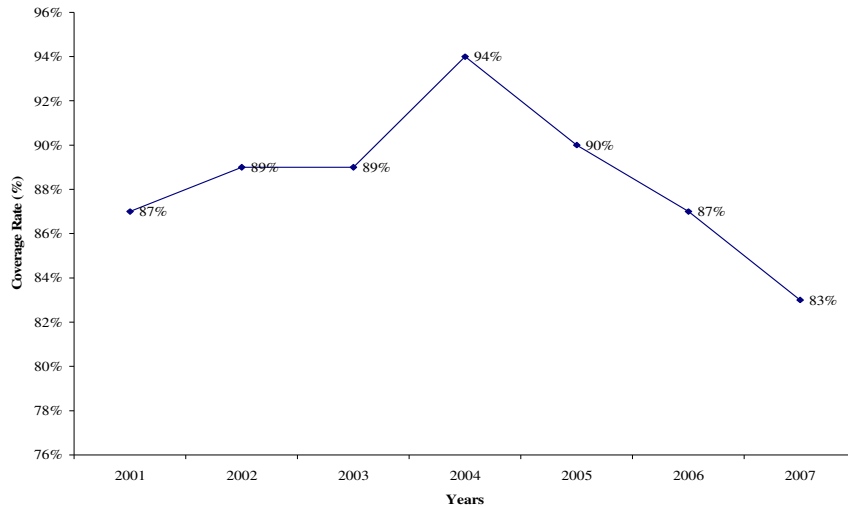


Figure 2.2: DPT-HB3 coverage by age 12 months

Source: Health Sector Performance Profile Report 2008 Update for financial year July 2007 – June 2008

Reasons for rise of EPI vaccines in coverage

It should be noted that from 1980 to 1996 EPI was a vertical programme and it was supported by different partners mainly DANIDA which supported it as a project through strengthening of its managerial and financial capacity. Other partners were UNICEF, Rotary International, JICA, WHO and others. External support for EPI was stable for a number of years and greatly contributed to the stability of immunisation coverage. Hence there were sufficient resources; vaccines, equipment (Cold Chain), and skilled human resources. The program is relatively successful in its aim of providing immunization for all infants, and the national immunization coverage rates based on the entire birth cohorts each year. The increase in coverage of EPI vaccines could be a result of:

- A multi-sectoral approach to boost immunization and increased collaboration between the Ministry of Health and its various partners
- There was commitment from higher political, religious and other community leaders.
- Community awareness through effective social mobilization. This resulted in increased public awareness and reception of immunization services offered.
- Political stability in the country

Reasons for decline in EPI vaccines coverage

Despite that in early 1900s and 2000s, EPI documented up to 99% immunization coverage (MOHSW, 2000), in recent years, it has declined to 83% and 86% in 2007 and 2008, respectively. The observed decline is reported mainly to be a mathematical and discrepancy between population statistics issued by the National Bureau of Statistics (NBS) and the actual number of children available in the community. While EPI records indicate to cover almost all the eligible children and pregnant mothers in the community, thus recording more children and pregnant mothers than that issued by the NBS. Also, the reported good immunization coverage was achieved when the programme was running as a project which attracted a lot of funding from different partners. There has been a significant shift in funding for activities such as social mobilization/village campaigns and monitoring and evaluation activities. Due to decentralization of the program activities and funding system at district level, much of the supportive supervision and service delivery level is done by the RHMT and CHMT members whose knowledge and skill composition does not suffice the need for EPI services at different service delivery levels.

Financing mechanisms of the vaccines and vaccination activities

Government reforms in Tanzania have had a significant impact on the financing of immunization activities. Two outcomes of the reform process that have had the greatest effect on immunization financing are the creation of the SWAP and the decentralization of health sector planning and financing. The SWAP has changed the way that the EPI receives much of its donor funding, as well as the overall level of funding. Many donors that used to finance the EPI directly as a vertical program now contribute unearmarked funding to the health sector as a whole through a consolidated 'basket' of donor funds. While the EPI continues to receive direct programme support for specific activities, such as campaigns, or items, such as cold chain equipment, donor funding for routine EPI costs seems to be considerably more uncertain than in the past.

On the other hand, the Poverty Reduction Strategy Paper, the Tanzania Assistance Strategy, and the Tanzania Development Vision 2025 identify the health sector and immunization specifically, as priority areas. Specific immunization or immunization-related targets are included in these strategy documents, which ensure that the EPI receives a certain level of government and basket funding to assist the Government in achieving these targets. As a reflection of its priority status, the EPI program is included as a line item in the Medium Term Expenditure Framework, along with other priority areas/services.

While about 80% of the vaccine services in Tanzania are funded by the government, UNICEF and WHO have also been reported to play a role in supporting immunization services. The government meets costs for vaccines, cold chain equipment, transport, personnel emoluments and office expenditure. UNICEF is reported to fund activities such as social mobilizations, IECs, training and acts as a procurement agent for vaccines and cold chain equipment. Similarly, the WHO meets the costs for disease surveillance and technical support. Other funding partners include the GlaxoSmithKline (GSK).

The EPI national office does not collect all district health plans and is, therefore, not completely informed about the level of health sector funding being received by the districts, how they are allocating those funds among different health activities, or the specific immunization activities being carried out. Due to time limitations, the study team was not able to collect and review district comprehensive health plans to assess how district-level funding of immunization activities has changed. However, funds for kerosene, which the MoHSW had been giving to districts in the past, are now being transferred directly from the Treasury to the local District Executive Director (DED) accounts. Thus, a specific line item for kerosene is required under the district budget guidelines.

It is important to note that central level funds cover the vast majority of immunization activity costs, including vaccines, cold chain equipment and maintenance (except kerosene), other equipment and supplies, training, and national monitoring and surveillance. Some of the changes in donor funding are a result of diverting funds formerly going directly to the EPI to the basket fund.

DANIDA which used to provide vaccines, injection supplies, cold chain equipment, and other types of support to the EPI for many years, currently, provides largely through the basket fund. UNICEF's support to the routine EPI has also declined significantly over the past few years. At present, UNICEF receives no earmarked funding for routine EPI costs.

MEDICINES, EQUIPMENT AND MEDICAL SUPPLIES

Access to essential medicines has been one of the implicit policy objectives in the health sector since independence. It is indeed one of the important aspects of the Tanzania National Drug Policy (MOH, 1993). The national drug policy is a dynamic reflection of the National Health Policy since it attempts to operationalize the general policy statements enshrined in the health policy document. The overall objective of the National Drug Policy (1993) which is currently under review is to provide free and comprehensive basic health services to all Tanzanians at affordable costs. This is in line with the constitution of Tanzania, which provides for the right of every individual to life and enjoyment of good living standards. The overall objective of the drug policy seeks to contribute to the attainment of the right to life by ensuring free and comprehensive health services to all Tanzanians. This is intended to be achieved through making available to all Tanzanians at all times the essential pharmaceutical products which are of quality, proven effectiveness and acceptable safety, at a price that the individual and the community can afford.

The concept of essential drugs underlies the selection of drugs in that those drugs of utmost public health importance are given first priority. One of the criteria of essential drug selection is cost and price. Drugs will be selected and distributed as generics, and the number of drugs in the market will be restricted to two brand name products for each drug on the national drug list. This may not be the case today since there may be more than two brand names for a generic drug on essential drug list.

The supply of medicines, equipment and medical supplies for government health sector is centrally coordinated by the Medical Store Department (MSD). Government approved Faith Based Organizations (FOB) hospitals also buy from MSD. MSD is a semi-autonomous government department under the MoHSW created in 1993. MSD has eight zonal stores and a headquarters and a central warehouse in Dar es Salaam.

Since 1984, dispensaries and health centres have been supplied with medicines and related supplies through a push system (drug kits); i.e., each primary health facility received a monthly kit with standardized contents. Although the system was easy to operate, it was unable to address needs of health facilities due to the difference in morbidity pattern resulting into wastages and shortages of medicines and related supplies in health facilities. In order to ensure a reliable supply of medicines, equipment and medical supplies in these facilities, the MOHSW has developed new system namely Indent System and Integrated Logistic System (ILS).

Regulatory mechanisms for quality, safety and effectiveness of medicines

Tanzania has had difficulties for instance regulating the private pharmaceutical sector. There is evidence of malpractices among the private retail drug sellers particularly in terms of quality of drugs, dispensing practice and drug pricing. Despite the development of the Tanzania Food and Drugs Authority (TFDA) in 2003 to regulating the drug sector, there is still more to be done to monitor the operations of private retail drug sector. This is important as private retail drug sellers are closer to most of the population, and normally the first care seeking site for people who may not be able to go through health facilities for diagnosis.

The government has established the TFDA as a regulatory body for quality, safety and effectiveness of food, drugs, herbal drugs, cosmetics and medical equipment. It was established by Act No 1 of 2003 – The Tanzania Food and Cosmetics Act which repealed the Pharmaceutical and Poisons Act No. 9 of 1978 and the Food (Quality Control) Act No 10 of 1978. This body registers all drugs which comply with the rules and regulations of the Act.

These are the only drugs and medical resources which can be procured by MSD or any other private dealer. Unless the drug or medical supply or equipment is registered by the TFDA, it cannot be imported or used in the country.

Health sector reforms and equity in access to essential medicines in Tanzania

Equity is a fundamental principal attached to Tanzania's heritage from its past. The health sector reforms following the Arusha declaration therefore aimed to address the discriminatory urban-based health care system inherited from the colonialists after independence as stated in *The Second Five Year Development Plan* (1969). This plan stressed equitable distribution and access to social services, with targets set at one health centre for every 50,000 people and one dispensary for every 10,000 people. The government of Tanzania therefore embarked on free health care strategy to all people and banned the provision of health care services by the private sector in 1977. This was to ensure an equitable access to health care for all people in the country without discrimination, in line with the Alma Ata declaration of 1978 of 'Health for All' by 2000. However, due to the economic crises, which faced many developing countries in the 1980s, the health care system could not meet the health care needs of Tanzania's people. Hospitals faced shortages of medicine and clinical equipment and unmotivated medical staff. This situation revealed a defeat of the noble national objective of ensuring equitable access to health care service by all people in the country and points to the infiltration of commercialization into the health system. In 2007, Tanzania reviewed its National Health Policy from which the Primary Health Services Development Program (2007 - 2017), popularly known as MMAM was derived (see Chapter 1). This was geared into improving accesses and equity of health care services in the country.

As it has been pointed above the distribution of medicine in Tanzania has been improved by introduction of different approaches which replaced the pre-determined Essential Drugs Programme (EDP) Kit system that was a push arrangement for a fixed period of time. Despite shortcoming, it should be recognized that the current distribution strategies has improved the availability of medicines, equipment and medical supplies at lower level of health care service delivery.

Indent and Integrated Logistics Systems

The Ministry of Health has instituted a policy to replace essential drug kits with an indent system in order to tailor drug orders to fit the needs of each particular area and to reduce wastage. Indent is a system whereby a Health centre or a Dispensary orders drugs and medical supplies according to their requirements up to the budget limit. The system serves orders from distant customers, processing the orders, pack and finally delivering the supplies to the customer (health facility or dispensary). In the first place, the MOHSW introduced the system as a pilot project in Morogoro region in 1999, where health facilities placed their orders with MSD through the District Medical Officer. Initial assessment of the programme indicated that, the indent system reduced the value of consumed supplies by 24%.

An Integrated Logistic System (ILS) is a system for managing various categories of health supplies, using a single set of procedures. The ILS is a type of Indent system where Dispensaries, Health centres and Hospitals order quantities of each supply according to their needs and within their budget. To be successful, the ILS must fulfil the six Rights of supply management. According to MSD, the system and its staff must ensure that they order i) the right items; ii) in the Right quantity; Of the Right Quality; iii) is available at the Right Place; iv) At the Right Time; and v) For the Right Cost.

Despite the government efforts, a recent assessment of medicine supply system in Tanzania observed a problem of stock-outs which have been associated with poor stock management in estimation of maximum and minimum levels; i.e.; error in forecasting at medical store as well as health facilities. The main reasons for stock-out at health facilities also included unavailability of adequate funds and non conformity of quantities delivered to orders. The report also found that there is inadequate storage space, storage equipment and facilities for control temperatures (MoHSW, 2008). As presented in Figure 2.3, availability for tracer medicine in zonal medical stores and health facilities were reported to be 82.5% and 88.9% respectively. The supply of medicine and supplies for vertical programs (NACP, NMCP and NTLP) were reported to be excellent (MoHSW, 2007).

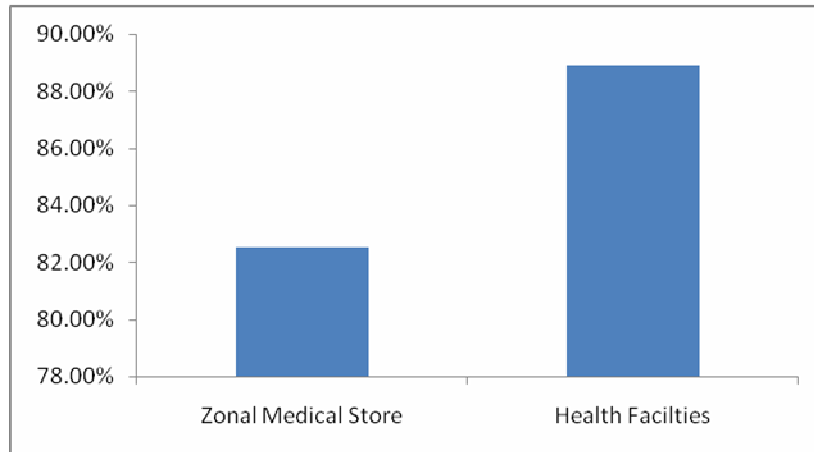


Figure: 2.3 Percentage median availability of tracer medicines
 Source: MoHSW 2008, In-depth assessment of medicine supply system in Tanzania)

Faith based organisation health facilities have reported to have higher availability of drugs than government facilities. This is based on the flexible ordering and procurement procedures because they buy from MSD, Mission for Essential Medical Supplies (MEMS) and private suppliers. For example MEMS delivers orders to the hospitals within two weeks, hence it is more reliable than MSD.

Reasons for problems in supply of medicines and other supplies in Public Sector facilities have been identified to include insufficient of drugs budget e.g. TSh 4 and 8 million for a dispensary and health centres per year and lack of well trained pharmaceutical staff which are also capable in forecasting. Others included delays in procurement and/or distribution by MSD; centralization of processing orders; lack of buffer stock; drug expiration; drug misuse; shortcoming in storekeeping facilities particularly in primary health facilities; and shortage of transport to allow distribution at district level.

Accredited Drug Dispensing Outlets (ADDO) Programme

In order to increase the accessibility of quality medicines at community level, the government aimed at improving the existing Part II poison shops. Part II poisons shops, popularly known as *duka la dawa baridi* (DLDBs), constitute the largest network of formally licensed outlets for basic essential drugs in Tanzania. DLDBs are found in all districts. Although exact numbers are not available, more than 4,600 DLDBs are estimated to exist, about one for every 7,400 persons. This figure is over 50 percent higher than the equivalent figure for all public health facilities and 11 percent higher than all public, voluntary, and religious facilities combined. For a variety of reasons, DLDBs are often the most convenient retail outlet from which to buy drugs. Moreover, with drugs not always available in public primary health care facilities, patients will often turn to

DLDBs to obtain medicines and supplies prescribed by the government health worker. Given the minimal pharmacy services in rural and peri-urban areas, it is obvious that DLDBs play an important role that could be enhanced in providing access to essential drugs for a significant proportion of the population. Available data, however, reveal a number of major problems with DLDBs which include Insufficient number of qualified staff; lack of assurance of drug quality; high drug prices charged to patients; insufficient variety of drugs legally available to meet consumer needs; and stocking of drugs unauthorized by the regulatory authority.

Each of these problems is exacerbated by inadequate enforcement of regulations, difficulty in finding reliable and legal sources of drugs and supplies, and a limited list of authorized drugs. The Accredited Drug Dispensing Outlet (ADDO) programme is designed to address each of the problems associated with Part II shops.

The adopted strategy for improving the quality of products and services in DLDBs through ADDOs seeks to combine changing the behaviour of shop owners and dispensing staff by providing education, incentives, and regulatory coercion with efforts affecting client demand and expectation with regard to quality products and services. The core of the system begins with clients with illness who make decisions to seek or access care. These decisions appear to be based on cultural beliefs about what type of treatment is needed for a particular illness or condition (traditional, spiritual, modern, etc.), distance to care providers, seriousness of the illness, wealth or availability of cash, failure of previous treatments, drug availability in public facilities, perceived quality of local care providers, and provider referrals.

An assessment of the system has revealed some access gaps in respect to drug availability, primarily in the public sector, and issues related to quality and affordability of products and services, especially in the private retail sector (Mhamba et al., 2005). These mainly include the following: i) geographical access to drugs does not appear to be a problem and is not perceived as a problem by the public; ii) availability of drugs is a problem at the Medical Stores Department (MSD), especially, but not exclusively, at zonal stores outside of the Dar es Salaam zone; iii) availability issues exist in public sector primary health care facilities and also in many hospitals; iv) availability does not seem to be a significant problem at mission health facilities; and v) in respect to quality of drugs and services, SEAM data revealed that the public cannot be assured of the drug quality for a significant proportion of drugs in the Tanzanian market.

These findings pose major challenges to the MOHSW, namely to seek the ways and means to improve the availability of drugs in the public sector, especially in hospitals and primary health care facilities, and to improve the quality of products and services in the private sector. To address these challenges, strategies were developed and approved by the MOHSW for implementation. The strategies included

- Establishing a network of accredited drug dispensing outlets (ADDOs) in rural and peri-urban areas of the country to provide an increased range of products similar to those approved for primary health care facilities
- Establishing a tiered pharmaceutical product quality assurance program
- Establishing an alternative, private sector supply system to augment the MSD supply system for the public sector, other MSD clients, and possibly rural retail drug outlets by providing quality, competitively priced health commodities.

The strategies for establishing a network of accredited drug dispensing outlets and drug quality assurance are currently being implemented.

The ADDO program began as a pilot program to improve the quality of care provided in *duka la dawa baridi* (DLDBs), private drug shops. DLDBs were originally constituted by the TFDA to provide non-prescription medicines in the private sector. DLDBs currently constitute the largest network of licensed retail outlets for basic essential medicines in Tanzania, with more than 6,000 shops across all districts in the country. However, based on evidence that DLDBs were not operating as intended, (CPM, 2003) the MoHSW through TFDA in collaboration with the Management Sciences for Health and Regional and Local Government Authorities Strategies for Enhancing Access to Medicines (SEAM) Program piloted the ADDO program in Ruvuma from 2002 to 2005. The program was designed to provide Tanzanians living in rural and peri-urban communities the opportunity to purchase quality-assured non-prescription and a limited number of prescription medicines from regulated, properly operated drug outlets staffed by trained dispensers, particularly in places where accessibility to public health facilities is limited or when there are stock-outs of essential medicines at public health facilities. After successful piloting in Ruvuma, the Government of Tanzania decided to roll out the program to other regions. Findings from evaluation reports show that ADDOs when compared with DLDB are well stocked with essential medicines, have improved quality of dispensing and prices of medicines are in line with the national market prices. Therefore, the roll-out of ADDO country wide is inevitable as will provide a steady medicine supply to the majority of Tanzanians (<http://www.msh.org/SEAM/report>). However, the government need to accelerate the rollout of ADDO in order to realise its goal of covering over 80% of rural and peri-urban areas of Tanzania Mainland to have an opportunity to purchase quality assured basic medicines from a well-regulated and properly operated private medicine outlets manned by trained personnel by 2010 (<http://www.tfda.or.tz>).

On the other hand, in line with NSGPR the expected benefit from ADDO program might contribute to poverty reduction. Specific benefits include:

- Improved access to quality, safe, effective and affordable medicines to a larger population.
- Reduced waste of time in searching for medicines and thus serving time for other productive activities;
- Creation of income generation activities for ADDO owners;
- Creation of reliable employment for ADDO dispensers especially women
- Creation of a skilled pool of trainers, dispensers, and inspectors.
- Increased revenue collections to the Local Authorities and Tanzania Revenue Authority.
- Improved referral system for patients who first consult drug outlets
- Creation of a system for application and repayment of loans by ADDO owners through micro financing institutions
- Assurance to access of medicines through health financing schemes such as National Health Insurance Fund and Community Health Fund

Equipment

Examining the issues of equipment per se, the situation is not exceptional as there is shortage. For example a study which assesses the situation of emergency obstetric care (EmOC) for safety motherhood in public health facilities in Tanzania Mainland, reported to have acute shortage of essential EmOC equipment and supplies especially at health centres and dispensaries (Malecela et al. 2006). Similarly, a study conducted in Tanga, it was found that laboratories had limited number of equipment (Ishengoma et al.; 2009) and shortage of microscope at dispensary level is high. In addressing this shortage, for example, the National Malaria Control Programme (NMCP) is in process of deploying rapid diagnostic test (RDTs) in all public health facilities to minimize unwarranted use of high-cost Artemisinin combination therapy (ACT) (MOHSW, 2009, Malaria Medium Term Strategic Plan 2008-2013 (MMTSP, 2008). It was also reflected in the 2002 Policy Guidelines for oral health care in Tanzania that

there is lack of equipment and supplies at lower levels; hence there was a need for rehabilitation/establishment of district dental clinics and provision of appropriate equipment, instruments and supplies.

Although the focus of this review is on lower level of health delivery, it is astonishing noting that even at Muhimbili National Hospital equipment problems and supply and staff shortages together accounted for one quarter of postponements of surgical operations while in laboratory, a lack of equipment prevented some tests to be performed (Mbembati et al., 2008)

There have been notable improvements in communication as most districts had good communication facilities including different telephone services such as landlines and cellular network. Over half of districts have shortwave radio and about 97% have computers but few have internet connection (MOHSW, 2008).

FUNDING FOR PROCUREMENT AND MANAGEMENT OF DRUGS AND MEDICAL SUPPLIES IN TANZANIA

While the per capita expenditure on health is about USD 5.5, drug expenditures by the MOHSW represent between 14-19% of the total health expenditures, with 50-60% of this amount going to primary health care. Actual expenditure on these items in 1999–2000 was about USD 0.30, indicating a sizable shortfall in funding for essential drugs in the public sector. Budget allocations to hospitals for drugs and medical supplies are made on a population basis. PHC drug kits consume about 50% of drug and medical supply resources, and the first priority for funds received is supplying kits to health centres and dispensaries.

A financing gap of about USD 3.5 per capita was estimated. The gap is particularly acute in “other charges” and indicates a shortfall in the provision of essential drugs and medical supplies in the public health sector.

Procurement of drugs and medical related supplies

MSD successfully procures millions of dollars of pharmaceuticals and medical supplies from the international and domestic market. MSD management purchases drugs at highly favourable prices when compared to international standard pricing. MSD is the sole supplier for the public sector and primary supplier to faith-based and other nongovernmental, non-commercial groups providing health services in Tanzania. On balance, MSD is a financially strong organization that procures drugs at extremely favourable prices, has a relatively good distribution capacity, and has shown a record of improved workforce performance. However, problems with stock availability have been evident in recent years and projections of significantly increased demand, together with the implementation of the indent system, are likely to put further pressure on MSD’s physical and managerial capacity as well as prevent any easing of availability problems.

To its credit, MSD has been taking steps to resolve drug and medical supply availability issues within its organization. The steps should serve to improve drug availability. However, even with increased efficiencies, a number of factors seem to indicate that MSD is likely to continue to exhibit some degree of difficulty in dependably meeting all the requirements of its clients. To the extent that this is a reasonable evaluation of the situation, the government may want to consider options for alleviating the pressure on MSD by making it possible for health facilities to buy drugs and medical supplies from other approved suppliers as it has been observed from MoHSW (2008) reports where about 45% of health facility respondents reported to procure product from other sources (Figure 2.4)

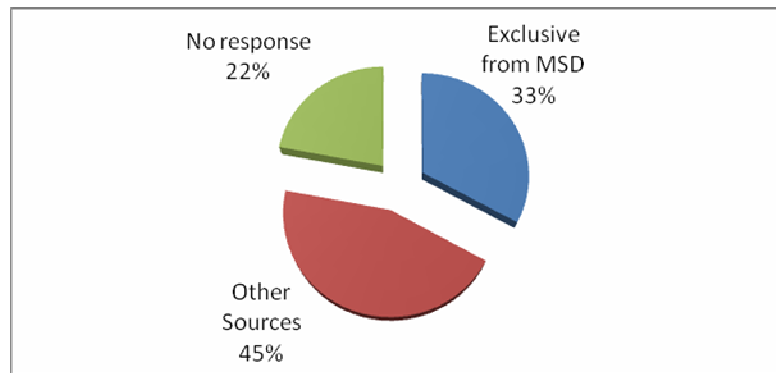


Figure 2.4: Procurement Sources by Health Facilities
 (Source: MoHSW 2008, In-depth assessment of medicine supply system in Tanzania)

Distribution of drugs and medical related supplies

The predominant single distributor of pharmaceuticals and medical supplies in Tanzania is the MSD. Since the government deposits funds for its health facilities with the MSD, it has a virtual monopoly for distributing pharmaceuticals and supplies to all public sector health facilities, including District Designated Hospitals. In addition to supplying government facilities, MSD has the country's pre-eminent drug distribution system. The MSD's distribution strength, combined with competitive, if not the lowest, prices, means that it supplies the majority of commodities to mission/faith-based health facilities. Given the country's reliance on the MSD for drug distribution, both public sector and private sector representatives have expressed concern that any inability of the MSD to meet client requirements could have disastrous effects on Tanzania's health care system.

MSD has a good distribution capacity and record. For example, a survey undertaken in 1998 to determine whether medical kits reached their intended beneficiaries indicated fewer discrepancies with MSD deliveries than with district deliveries. During the period under study, MSD distributed more than 46,000 blue and yellow kits. Of these, less than 1% could not be accounted for, which is a noteworthy achievement. When discrepancies did occur, they were attributed to poor record keeping and the possible diversion of kits in transit.

Major increases in workload in the last three years have stretched MSD's physical and managerial capacity. There are signs that MSD is working under considerable stress and that service is not meeting customer expectations. The increase in throughput volumes is evidence of this increase in workload. It should be noted that MSD has responded well to this increased workload, with evidence of improved workforce performance. MSD has responded positively to the challenges it has faced in recent years. However, projections for future funding indicate demand continuing to grow significantly. One must question whether it is reasonable to expect that MSD can continue to absorb an ever-growing demand or whether there is a limit on how much can be realistically expected. This question is important not only in light of future demand projections, but also in relation to MSD's documented weaknesses in certain areas, such as inventory management.

In summary, the distribution structure of medicine and medical supplies where Manufacturers, wholesalers, sub-wholesalers, donors, and the MSD are the principal distributors in Tanzania is described as follows:

- Foreign manufactures sell products to the MSD, local manufacturers, importers/wholesalers, donors, NGOs/voluntary agencies, and private hospitals.

- Local manufacturers sell products to the MSD, wholesalers, NGOs, and large private institutions (hospitals, retail pharmacies, etc.).
- Donors provide drugs to NGOs and voluntary agencies.
- The MSD distributes products to government health facilities, NGOs/voluntary agencies, and parastatals from seven zonal stores.
- Major importers/wholesalers sell primarily to sub-wholesalers/stockists, large private health facilities, and retail pharmacies. Sales to the public sector and NGOs/voluntary agencies are generally minimal.
- Sub-wholesalers sell to smaller pharmacies, private health facilities, drug outlets (*Duka la Dawa Baridi/Duka la Dawa Muhimu*), and smaller wholesalers.
- Consumers obtain their products from public sector health facilities, private sector facilities, NGOs, pharmacies, and other drug outlets.

Drug and Medical Supply Demand Forecasts

Different sources provide different projections for drug expenditures. Regardless of source, all projections indicate an increase in demand for pharmaceuticals and medical supplies. Other sources also indicate an increase in funding for drugs and medical supplies. For example; Expected financing generated by hospital cost-sharing and the CHF was expected to rise from TShs 2.96 billion in 2000–2001 to TShs 10.95 billion in 2003–2004. Up to 50% of this funding was expected to be spent on drugs. National Health Insurance Fund (NHIF) annual expenditures on drugs are difficult to estimate, but they are expected to approach TZS 220 million. MSD's own projections have shown a 40% growth in throughput volumes between 1999–2000 and 2002–2003. Looking at the longer term, MSD projected throughput is expected to triple in size by 2010. Based on these volume projections, by 2010, MSD's throughput can be expected to rise to 40,000–50,000 cubic meters. This compares to 22,000 cubic meters in 2000–2001. At present, 50% of MSD's business is with pre-packaged kits. For MSD these are four stock items (local and international blue and yellow kits). Replacing this with an indent system will mean that MSD will have to pick and pack all PHC-level orders on an individual basis (for more than 3,000 health facilities). This change has major implications for warehousing systems, picking and packing operations, and inventory management.

MSD's ability to handle future demands

For the near future, MSD will remain the backbone for supplying the country's public sector health commodities. However, evidence that it may not be able to fully satisfy public sector demand is compelling. Out-of-stock rates at MSD zonal stores appear to indicate a stressed condition. Workload has doubled over the past five years and there is every indication that workload will continue to increase. MSD is actively taking steps to improve its operational capacity but even in the best of all worlds, there is scant evidence, if any, that a single vendor can or should be expected to reliably provide 100% of country requirements. One approach that could alleviate supply availability problems is the implementation of an alternative supply system such as the prime vendor system described previously. In essence, the system would provide quality, low-cost medications to public and approved private sector facilities with convenience at least comparable to that of MSD. Such a system is predicated on availability of funds in the regions/districts to procure needed supplies. Since all funds are currently deposited with MSD, the current hospital funding mechanism for drugs and supplies would require modification.

The key questions to ask regarding MSD's ability to handle future demands are (i) can MSD meet current demand satisfactorily and (ii) can MSD meet expected future demand. In considering these questions, MSD's capacity to absorb the effects of the indent system must also

be assessed. It is useful to look at the implications for MSD of continuing to be the sole supplier for publicly funded health facilities. Although organizational and informational system improvements may take MSD some way toward achieving this target, there must nevertheless be room for doubt as to whether MSD would achieve everything expected. In fact, based on the available evidence, it is arguable that demand has already outstripped MSD's ability to supply. It is recognized that implementation of an alternative supplier program will require extensive cooperation from both the public and private sectors, and a thorough evaluation is required by the government to determine feasibility of such a program.

MAJOR CHALLENGES

EPI Vaccine

- Decline in EPI vaccines immunization coverage rate in recent years for example from 99% before 2007 to 86% in 2008.
- Inadequate storage facilities: Although the Vaccine Management Assessment Report reported a general adequacy in infrastructure in terms of buildings, storage capacity and transport at all levels (MOHSW, 2007), this review has noted that the change from single disease condition vaccine to the introduction of the pentavalent vaccine in 2005 which utilizes one vaccine vial for each child/client has increased the bulkiness of the vaccines. This requires a large storage system at national, regional, district and service delivery levels
- Shortage of funds due to shift in financial support for social mobilization services; hence, community campaigns are not funded
- EPI personnel not being core members of the RHMT and CHMT affect the quality and frequency of supervision at service delivery level.
- Discrepancy between NBS population statistics and the actual number of eligible children and pregnant mothers for immunization.
- Finance for immunization programme after GAVI support ends, particularly in light of declining bilateral and multilateral support to the EPI.

Medicine, equipment and medical supplies

- Shortage of storage space and storage facilities for medicines and medical supplies
- Transport shortcoming at district level which affects the smooth and timely distribution of medicine, equipment and medical supplies
- MSD remaining the sole agent for procurement and distribution of medicines, equipment and medical supplies.
- Shortage of qualified pharmaceutical personnel
- Centralised Indent and Integrated Logistics systems ordering of medicines, equipments and medical supplies through MSD
- Fixed financial allocation for medicines and medical supplies for health facilities
- Acceleration of ADDOs rollout across the country while ensuring the service quality in operating regions

LESSONS LEARNT

EPI Vaccines

- EPI vaccination in Tanzania is offered as part of Primary Health Care (PHC) in all Maternal and Child Health (MCH) clinics, in all health facilities under the Reproductive and Child Health Section

- There are two immunization schedules currently in use which targets children under one year of age and the women of childbearing age (15-49 years)
- From 1996, the management of day-to-day immunization activities at service provisional point was left to councils as part of the Health Sector Reform. The central MOH was left with the role of policy formulation, issuance of guidelines and immunisation standards, procurement of vaccines, cold chain equipment and supplies and monitoring and supervision.
- The number of health facilities providing EPI vaccines has increased to reach 4,374 by 2008 of which approximately 75% are government-owned and the remaining belongs to non-governmental organizations, religious organizations and private practitioners
- Coverage of EPI vaccines has improved above 80% for each antigen but there is a steady decline of DPT-HB3 from 2004.
- The EPI programme activities receive funds from both the government and direct from development partners mainly from GAVI, UNICEF, WHO, World Bank and GSK. The government budget for EPI activities is through MTEF and Basket fund. The received funds are inadequate to support different activities of the programme. Overall, it is estimated that government funding for the programme has been at about 20% of the total programme costs.
- Reasons for rise and stability of EPI vaccine coverage included (i) sufficient resources from external support as vertical programme, (ii) commitment from higher political, religious and other community leaders, (iii) community awareness through effective social mobilization and, (iv) political stability in the country.
- Reasons for decline and fluctuation of EPI vaccines coverage could be due to (i) discrepancy between population statistics issued by NBS and the actual number of children available in the community, (ii) significant shift in funding for EPI vaccines activities such as social mobilization/village campaigns and monitoring and evaluation (iii) knowledge and skill composition of RHMT and CMHT does not suffice the need for EPI services at different service delivery levels in term of supportive supervision

Medicines, equipment and Medical supplies

- The supply of medicines, equipment and medical supplies for government health sector is centrally coordinated by MSD, also government approved FOB hospitals also buy from MSD
- MSD is a semi-autonomous government department under the MoHSW created in 1993 and has eight zonal stores and a headquarters and a central warehouse in Dar es Salaam
- Since 1984, dispensaries and health centres were supplied with medicines and related supplies through a push system Essential Drug Kit whereby each primary health facility received a monthly kit with standardized contents
- There regulatory infringement in private pharmaceutical sector and this compounded with failure of TFDA to effectively monitor their operations due to limited funds.
- There is a notable availability of medicine, equipment and medical supplies which could be associated with improved fund allocation and ordering and procurement procedures through Indent and integrated logistics systems.
- Health facilities face frequent stock-out of medicines which could be contributed by problems related to ordering and procurement procedures which are centralised and poor forecasting as a result of inadequate qualified pharmaceutical personnel.
- The government improved accessibility of quality medicines at community level by establishment of Part II poison shops, popularly known as *duka la dawa baridi*. *Duka la dawa baridi* failed to perform up to standards due to insufficient number of qualified

staff; lack of assurance of drug quality; high drug prices charged to patients; insufficient variety of drugs legally available to meet consumer needs; and stocking of drugs unauthorized by the regulatory authority

- ADDO programme or know as *Duka la Dawa Muhimu* was introduced in to replace DLDB, and is charged to provide Tanzanians living in rural and peri-urban communities the opportunity to purchase quality-assured non-prescription and a limited number of prescription medicines from regulated, properly operated drug outlets staffed by trained dispensers, particularly in places where accessibility to public health facilities is limited or when there are stock-outs of essential medicines at public health facilities.
- There is acute shortage of equipment for different functions such diagnosis, surgical, EmOC, communication, storage and transport.
- There is inadequate qualified pharmaceutical and other health personnel

RECOMMENDATIONS AND WAY FORWARD

There is a notable improvement in availability of medicine, equipment and medical supplies at lower level of health services delivery. These achievements are not satisfactory enough to achieve therapeutically better outcomes to the patients in contribution towards realisation of the MKUKUTA targets by 2010. In this regard, there is an urgent need for the government to review the implementation strategies to ensure that medicine, equipment and medical supplies are available at all times. This could be achieved by:

- i. Allowing public sector health facilities to order and procure drugs, equipment and supplies from private wholesalers by ending the monopoly of MSD. The MSD has the capacity to meet only about 65 to 70 percent of customer needs, making it difficult for public facilities to get the medicines they require. The introduction of other private suppliers will stimulate market competition and could be achieved by conducting stakeholders meeting to discuss the idea where implementation strategies of introducing competitive suppliers could be consensually reached and drawn.
- ii. Decentralization of the processing of Indent system and ILS from health facilities orders to Zonal Medical Stores to facilitate procurement and distribution. Current all orders are centralised contributing to unnecessary delay taking into account weak stock management at MSD.
- iii. Increasing allocation of funds as the current budget for health centres and dispensaries does not meet the demand. Also there is a need to improve disbursement of funds direct to District council instead of being retained by MOHSW. Distribution of medicine, equipment and medical supplies upon receipt of cash for respective order by MSD this contributes in the stock-out and is compounded by poor forecasting.
- iv. Training, recruiting and deploy qualified pharmaceutical and other health personnel. Lower level of health services delivery faces an acute shortage of skilled health personnel to offer better health including forecasting of medicine and medical supplies. It is estimated that Tanzania has about 640 registered Pharmacists, 352 Pharmacy Technicians and 312 Pharmacy Assistants. With more than 5400 health facilities in the country, definitely there are inadequate of pharmaceutical personnel at different level of health care delivery.

- v. Accelerate the roll out of ADDO across the country to meet the target of over 80% coverage of rural and peri-urban areas by 2010. The government is committed to ensure the targets are met within the scheduled timeframe hence there is an urgent needs to solicit more funds by working closely with different development partners. ADDO will contribute a steady supply of safe and effective medicines to majority of Tanzanians but regulatory bodies, TFDA in particular need to ensure the quality of services provided because regulatory infringement is extremely common with drug shops in low income countries including Tanzania (Goodman et al., 2007). During the era of trade liberalization, ADDO are exposed to poor-quality drugs, including counterfeits which will defeat the whole good intention of its introduction based on the health risk they present.

The coverage of EPI vaccines have significantly improved despite slippage of DPT-HB3. Based on its key contribution in reduction of childhood and maternal mortalities to realize of MKUKUTA targets, it is important to improve coverage of EPI vaccines among children under one year of age and the women of childbearing age, that is, 15-49 years by:

- (i) Increasing funding allocation for social mobilization and demand creation: Social Mobilization is traditionally perceived as a community-based or country-level action. It capitalizes on people's energies and commitments, on available resources, and on situations that can help move a group of people to achieve a common purpose, and understand why it matters to them. Therefore, it is a key component in ensuring improved coverage of EPI vaccines but funds allocated for these activities are inadequate. Currently, government efforts are supported by Global Alliance for Vaccines and Immunization (GAVI) which bring together all the key partners in immunization including UNICEF, the World Health Organization, the World Bank, governments, non-governmental organizations, vaccine manufacturers and the Bill and Melinda Gates Foundation
- (ii) Strengthening vaccination campaign: Despite the availability of safe and effective EPI vaccines, the incidence of new cases necessitate the need of have special vaccination campaign in order to improve coverage and accelerate childhood survival. Hence National Immunization Days and massive national campaign need to be strengthened by the government soliciting funds from different development partners. For example in 2008, UNICEF supported campaign that provided four life-saving interventions for children including measles vaccine, vitamin A supplementation, de-worming tablets and long-lasting insecticide treated bed nets to prevent malaria. The government also dispensed oral polio vaccine at border posts and other strategically located centres.
- (iii) Strengthening mobile and re-establishing outreach vaccination services by targeting marginalized and poor groups including urban and peri-urban poor and ethnic minorities: Extra outreach session can ensure that the poorest children are also protected against vaccine preventable diseases. This strategy is one of the components of Reaching Every District (RED) approach which aim at improving organization of immunization services so as to guarantee sustainable and equitable immunization for every child (WHO-AFRO, 2004). The government need to ensure health facilities are operational (functioning fridge, available vaccines, injection equipment, transport for outreach, trained and supervised health workers)

- (iv) Training and improve supportive supervision: Since decentralization, the programme is facing shortage of well qualified and committed personnel to conduct effective supportive supervision from RHMT and CHMT members. There is an urgent need for the officer at regional and district responsible for EPI vaccine to be co-opted member of RHMT and CHMT.
- (v) Enhanced surveillance for completeness and timeliness reporting: Surveillance is an important phenomenon to monitor the implementation progress of the programme whereby outbreaks could be detected and notified promptly to immediate response for its containment. Through surveillance the programme have been able to identify, notify and respond to different outbreak in different areas in Tanzania but the surveillance reports suggest the detection rate needs to be improved. The government need to solicit enough funds to enable the programme to intensify surveillance for early detection in order to attain the elimination goals.

REFERENCES

- Mbembati NA, Mwangu M, Muhondwa EP, Leshabari MM (2008). Performance indicators for quality in surgical and laboratory services at Muhimbili National Hospital (MNH) in Tanzania. *East African Journal of Public Health* 5, 13-6
- WHO-AFRO (2004) Implementing RED Approach, A guide for District Health Management Teams
Center for Pharmaceutical Management. 2003. Access to Essential Medicines: Tanzania, 2001. Prepared for the Strategies for Enhancing Access to Medicines Program. Arlington, VA: *Management Sciences for Health*.
- Kimberly Smith, Abt Associates. Evaluation of GAVI immunization services support funding case study: Tanzania. *Gordon Larsen, academy for Education Development*. June 2004.
- Mhamba R, Ezekiel MJ and Shemdoe GS. Protecting rights of access to essential medicines under trade and market policies: The Tanzania case study. *Centre for Health Policy and SEATINI Regional Network on Equity in Health in East and Southern Africa (EQUINET)* September 2005.

CHAPTER 3: FURTHER ROLES TO BE PLAYED BY THE DEVOLUTION OF RESPONSIBILITIES FOR HEALTH FACILITY AND HEALTH PLANNING TO LOCAL GOVERNMENT AUTHORITIES

Summary: Decentralisation by Devolution (D by D) is contemporary reform process adopted alongside the Local Government Reform Process in Tanzania since early 1980's with a key focus to shift responsibilities from central to more autonomous local government structures. Because of D by D, Local Government Authorities (LGAs) have taken full responsibility for planning, budgeting and management of government services, including health, education, and water supply. Nevertheless, there is a need to further understand the achievements and achievement of decentralisation by devolution linked to progress toward MDG and PRSP/MKUKUTA goals. During December 2009, we reviewed various policy and scientific literature to explore further roles to be played by the devolution of responsibilities for Health Financing and health planning to Local Government Authorities. There are notable achievements of D by D, including the devolution of responsibilities for health facilities and health planning to Local Government Authorities – supported by financial resources (through the Health Basket Fund and Block Grants). However, there have been constraints such as staff shortages, poor performances of the available health workers, inadequate managerial skills, poor and inadequate infrastructure and irregular availability of drugs and supplies, a limited availability of information on expenditures in Councils and dominance of bureaucrats over community representatives at district level when it comes to planning and budgeting. The programmes, projects and activities implemented under the Decentralisation by Devolution have contributed to improvements in health outcomes and to some improvements in the quality of health services at community level. The programme's current and future gains [need to] be consolidated and sustained in order to ensure sustainability of reform process and its acceptance among the stakeholders. There is a need to develop a set of social, political, economic, ICT factors and the dynamic “reform regime” in a very flexible and pro-active manner.

INTRODUCTION

Since independence, the Government of Tanzania has committed itself to fighting against three enemies, including poverty, ignorance and diseases. Different policies and strategies have been pursued in line with political situation in the country from single to multi party governed nation. Decentralisation by Devolution (D by D) is contemporary reform process adopted alongside the Reform process in Tanzania since early 1980's. A key focus of D by D has been to shift responsibilities from central to more autonomous local government structures. With a view to achieve the MKUKUTA and the Millennium Development Goals, Local Government Authorities (LGAs) have empowered to take full responsibility for planning, budgeting and management of government services, including health, education, and water supply. The objective of this Chapter is to explore the documented achievements achievement so far and further roles to be played by the devolution of responsibilities for health facility and health planning to local government authorities.

Information presented herein was obtained through a review of both grey and published literature, obtained from library archives as well as from Internet search on Google and Pub med focussing on policy dynamics in Tanzania and various reform processes undertaken since independence in 1961 in fighting war against the main enemies namely poverty, ignorance and diseases.

BACKGROUND TO LOCAL GOVERNMENT REFORM PROCESS IN TANZANIA

The Government of Tanzania has a long history of reforms since attainment of Independence in 1961, when three enemies, namely poverty, illiteracy and diseases were declared. Soon after the independence, the new government abolished the Native Authorities established in 1926. After the Independence, a new structure of Councils covering the whole country introduced, by 1972, this number had risen to 68. Between 1972 and 1984, the local council authorities were replaced by a direct Central Government rule, through the District/urban development councils, following the 1972 declaration of decentralisation policy “*madaraka mikoani*”.

During 1972-1984, the government put an emphasis in decentralisation policy which among others included, merging of Urban Councils with neighbouring rural councils, emphasis on "Socialism and Self Reliance" and extension of central Government Authority and control to village level.

Following fundamental political, social and economic changes which were initiated since early 1980's, Tanzania has moved from being a centrally planned and controlled one-party socialist state to being a multi-party democratic state with an open economy.(URT 2009) In 1982, the Parliament of the United Republic of Tanzania enacted legislations Acts No.7, 8, 9, 10 and 12 to reinstate power to the people through established sound Local Governments. Local Government elections took place in 1983 and Acts No.7 and 8 reintroduced rural and urban Local Government Authorities respectively effective from January 1984. The reintroduction of local government authorities (1984 -1998) raised hopes for an improved performance through greater involvement of citizens.

However, the improved performance in service delivery as well as development initiatives through broad-based public involvement was not being achieved as anticipated, due to several underlying reasons:

1. Weak human resource capacity and management
2. Weak leadership and poor management of the councils.
3. Shortage of properly qualified, disciplined and committed personnel.
4. Shortage of revenue due to narrow tax base.
5. Over-employment within the Councils.
6. Lack of transparency and accountability in the conduct of Councils' business.

In 1996 the Government decided to restructure the regional administration, giving more room for development of the Councils through the Local Government Reform Program ‘LGRP’ Regions became facilitators, rather than implementers. At national level the councils are overseen by the Prime Minister’s Office for Regional Administration and Local Government (PMO-RALG).

The LGRP was formulated and implemented by the government in order to address the problems which constrained the performance of the local government authorities noted in the earlier reforms. Through the programme, the government intends to strengthen local authorities and transform them to be effective instruments of socio-economic development at local level.

DECENTRALISATION BY DEVOLUTION

Decentralisation by devolution falls under Cluster III in NSGPR, which addresses: Governance and Accountability. Seven goals, each with one or two operational target (s) have been stipulated under cluster III, aiming at achieving the following four broad outcomes: ensuring good governance and the rule of law: leaders and public servants are accountable to the people: democracy, political and social tolerance are deepened: and peace, political stability, national unity and social cohesion are cultivated and sustained. The third goal focuses on establishing effective public service framework in place to provide foundation for service delivery improvements and poverty reduction through the two operational targets namely;

- *Administrative systems of public institutions are managed transparently and in the best interests of the people they serve.*
- *Decentralisation by devolution institutionalised and implemented to enhance public ownership of the development and poverty reduction process.*

Decentralisation by devolution was formalized in the 1998 Policy Paper on Local Government Reform that spelled out a policy of decentralization by devolution ‘D by D’ (www.pmoralg.go.tz). D by D is a vast, dynamic and complex programme of change and change management which entails the transfer of powers, functional responsibilities and resources from central government to local government authorities. It also stands as the main strategy for the government to achieve the overall objective of the Local Government Reform: to improve the delivery of services to the public (PMORALG, 2004; Mmari, 2005).

In line with devolution principles, the Government’s vision is to have a local government system in which Local Government Authorities are: (a) Largely autonomous institutions, free to make policy and operational decisions consistent with the laws of the land and government policies; (b) Strong and effective institutions underpinned by possession of resources (both human and financial) and authority to perform their roles and functions; (c) Institutions with leaders who are elected in a fully democratic process; (d) Institutions which will facilitate participation of the people in planning and executing their development plans and foster partnerships with civic groups; (e) Institutions with roles and functions that will correspond to the demands for their services; and (f) Institutions which operate in a transparent and accountable manner (Ngware & Haule, 1993; URT, 2007a,b, 2009). Tanzania has devolved many Government functions to Local Government Authorities (LGAs) which are now responsible for delivering public services including health (URT, 2009).

Decentralisation by devolution in health sector

The government of Tanzania gives a special focus on council health services in the context of D by D and the commitment to reaching the NSGPR and Millennium Development Goals (MDGs) within the overall Government Vision 2025 (Mmari, 2005; URT, 2007a,b).

The D by D policy has put the Local Government Authorities in charge of delivery of social services and has given to the Prime Minister’s Office for Regional Administration and Local Government (PMO-RALG) the task to supervise them. Devolution has a far reaching impact on the health sector, whereby Local Government Authorities have become responsible and the MOHSW has withdrawn from direct service provision at district and municipal level (URT, 2009).

Local Government Authorities are responsible for delivering three types of public services in Tanzania: (1) concurrent functions; (2) exclusive local functions; and (3) delegated functions. Concurrent functions are public services which are funded and regulated by the central

government, but for which the provision is devolved by the sector ministries to the local government level. Health services belong to these concurrent services. All Councils produce annually a Comprehensive Council Health Plan (CCHP), which incorporates all activities of the Council Health Services, and all sources of funding at the council level (government funds, locally generated funds, local donor funds, etc.).

The CCHP is produced by the Council Health Management Team (CHMT), with inputs from the health facilities, the non-state actors and other co-opted members. It is approved by the Council Health Services Board (CHSB), which consists of community representatives, officers from other departments, and representatives from the private sector. The final plan is approved by the Full Council Meeting. The Regional Secretariat (Regional Health Management Team) approves the CCHP and forwards it to national level. The PMO-RALG together with the MOHSW assesses the CCHPs and gives final approval, before funds can be disbursed to the LGAs.

The LGAs provide quarterly technical and financial progress reports (including the health component) to the respective Regional Administrations, as part of the local government monitoring system. The Regional Administrations approve the reports, which are forwarded to national level and aggregated by PMO-RALG. In the future improvement of the quality of the technical progress reports and better utilisation by the MOHSW for monitoring is planned.

The funds for health services are managed by the Council and kept on a separate account (known as Account No. 6). Funds for health are released by the Ministry of Finance and Economic Affairs (MoFEA), including funds from the Health Basket Fund, kept in a holding account at MoFEA. Funds generated through insurance schemes and cost-sharing are kept in separate accounts under supervision of the CHSB. The Health Facility Committees with community representatives decide on utilisation of those funds in their respective health facilities, with guidance provided by the CHSB.

The Regional Administration is part of PMO-RALG and directly supervises the work of the LGAs. The Regional Medical Officer is an officer of the Regional Administration and the coordinator of the RHMT. The RHMT performs its duties of supervision and support to the District Health Services. In recent years, the RHMT functions had been reduced as part of the local government reforms. However, an agreement has been reached that stronger technical support by the RHMTs on behalf of the MOHSW is mandatory to improve the quality of the health services. During the implementation of the HSSP III these intentions will be concretized (URT, 2009).

Government's policy of devolution makes LGAs responsible for implementation of health services, and regions responsible for supervision. The central level provides leadership and stewardship in the health sector. The Councils, will take full responsibility for executive tasks in health and social welfare, applying LGA and PMO-RALG administrative procedures, with technical support from the MOHSW. Human resources in facilities will be prepared for management functions, to facilitate further decentralisation.

The RHMTs will concentrate on technical support to improve quality of the Council health services, without taking-over operational responsibilities. The central level (Ministry of Health and Social Welfare) will create an enabling environment for the health services, leaving executive functions to the appropriate stakeholders. The Ministry will decentralise more executive functions to its agencies and institutions (URT, 2009).

In the current reforms, the Ministry of Health and Social Welfare is responsible for policy development, strategic planning, resource mobilisation and monitoring and evaluation in the

health sector. Further integration and harmonisation of MOHSW activities with the NSGPR management and monitoring is expected in the coming period. As result of the D by D the Ministry does not have direct responsibilities for operational service delivery at the LGA level. However, the Ministry provides guidance to service providers and monitors the quality of the service delivery.

The Tanzania Quality Assurance Framework, with an accreditation system, will be an important new tool for the Ministry in guiding the health sector. The technical guidance by the Ministry to the service providers is mainly given through the health programmes, which are based at the head quarters. These programmes provide treatment guidelines, standard operational procedures and contribute to capacity building of service providers. In the future this support will be more integrated and coordinated, in order to improve efficiency (URT, 2009). It is envisaged that in the future, further decentralisation will give more responsibilities to the health facilities to plan and manage health activities in collaboration with communities and village governments.

ACHIEVEMENTS

It is worth appreciating the fact that the work done by the Reform programme since its inception was to lay solid ground in terms of philosophy, policy, initial implementation measures etc as a basis for enabling LGAs themselves to own and champion the reform process. At the same time one should appreciate the reality that the recorded and commendable achievements are inducing even greater genuine demands from stakeholders while capacity and resources remain as inhibiting factors.

Recent external health sector evaluation report (MFAD, 2007) earmarks significant progress in decentralizing planning, budgeting and management of health services to local level, linked to D by D. Important institutional bodies are in place and functioning including the Council Health Management Teams, Primary Health Facility Committees and Hospital Management Committees. Councils are engaged in the Comprehensive Council Health Plan (CCHP) process in a meaningful way. The budgetary aspects of the CCHP have been strengthened over time and the introduction and support of a comprehensive health services planning tool throughout mainland Tanzania is a notable accomplishment.

The Ministry of Health and Social Welfare is implementing the devolution of decision making policy to the district and regional level so that most activities and plan of activities are centred under the CHMT. Under this, the powers to recruit and retain health workers remain under the district councils. The government is trying to increase employment and retention of health workers in order to provide better health services. A programme/ plan of increasing matriculation/student's admission in the universities and colleges which offer any health course is been implemented.

Devolution of responsibilities for health financing

Ministry of Health and Social Welfare is one of the pioneer ministries in the implementation of D by D policy whose thrust was to ensure devolution of expenditures to the LGAs over time. What has worked and what has made a difference in the health sector in Tanzania has been the devolution of responsibilities for health facilities and health planning to Local Government Authorities – supported by financial resources (through the Health Basket Fund and Block Grants). Many of the organizational elements have also been established to allow the councils and their health management teams to undertake meaningful budgeting through the CCHP and to supervise and operate local health facilities.

A study conducted in 8 councils, found that the process of granting expenditure autonomy to the local levels is in progress in the health sector. Block grants, which are the funds transferred by the central level to the local authorities constitute the largest share of the expenditures in all the Councils (URT, 2007). The funds allocated to health sector through the councils have been used in consistence with stipulated guidelines. For instance, block grants have been proven to be allocated to personnel emolument and other charges, which is consistent with the guidelines set out in the CCHP manual (URT, 2007). Shares of resources managed centrally (by MoHSW) and locally (by LGAs) have changed slightly, indicating a slow pace in decentralisation of health sector financing (URT, 2009). In FY2005/06, about 67% of total health spending was centrally managed (by MoHSW), while the rest (33%) was managed by the Local Government Authorities (LGAs). The situation improved in FY 2007/08, with the share of health spending managed centrally (by MoHSW) declining to 58%, while the share managed by LGAs increased to about 42%. So far, the share of health sector financing managed centrally has averaged around 60%, with the Councils and Regions managing about 40% of the resources. However, this separation does not take into account expenditures by the MoHSW on drugs and supplies which eventually go to the LGAs (Ngware, 2005). In the course of, local Councils, especially rural ones, have benefited from a redistribution of health allocations through a more equitable pro poor Resource allocation formula in recurrent funding for health care (URT, 2007).

It is therefore worth noting the shift towards allocating more resources to the LGAs in the context of D by D (also further detailed in Chapter 4 of this review) is a right direction in the sense that most of the poor people who need health services (and can't afford to buy it from private providers) are located in the rural areas. This shift is also important and right one in the sense that it will strengthen LGAs which run the majority of Primary Health Care Facilities.

Human Resource / Administrative Decentralisation

Autonomy for local government authorities over human resources is an essential element of D by D. Strengthening of council level health services, supported by the upgrading of staff skills, and coupled with some improvements in centrally provided services (and the contribution of strengthened national vertical programmes) have contributed to improvements in service quality at health facility level. The last 'State of the Public Service Report' noted that more than 60% of government employees are employed at LGA level (MFAD, 2007; URT, 2009).

CHALLENGES

The Government of Tanzania decided to pursue a complex and difficult policy of D by D, as a journey rather than a destination. This was expected, and is the case world wide. It should be noted that momentum for change is gathering, and more importantly, government support at the highest level for the process is unwavering. Challenges are not unique to health sector. For similar reasons, D by D has been shown to have not adequately met the exiting needs for in other sectors such as education and environment (Mniwasa & Shauri, 2001; Mmari, 2005). However, the situation of skilled human resources remains glaringly deficient. The cadres most affected include medical doctors, nurses, clinical officers and pharmacists (Mmari, 2005).

There has been a lack of information on expenditures for all the Councils, hence limited determination of a comprehensive picture of how much the transfers to the local authorities represent out of the total public spending on health, and therefore a better determination of the scope of transfers in total expenditures, which would have been a good measure of performance of D by D in health sector (MoHSW, 2009). Due to a lack of such information it is not possible to show a trend in the transfers to categorically conclude if there is consistency with the policy of fiscal devolution (MoHSW, 2009).

There are inadequate managerial skills of staff in various areas. Supervision from the RHMT to backstop CHMTs in conducting supervisions at health facilities has not optimal. As a result health programmes are not always implemented as designed. integration and coordination of health programmes in general is poor. Programmes sometimes seem to compete for attention from health facility staff. But, most importantly, there is inadequate human resource for health service delivery at the primary level, both in numbers and in skill mix. Although the CHMTs are supposed to have access to the skills of non-medical council experts (accountant, planning officer, engineer, HR specialist etc.), in practice these people have not been adequately available (MFAD, 2007)

Council Management Teams are not fully informed on health policies, programmes, or specific activities, and may therefore not appreciate their importance. Furthermore, the D by D has not reached the grass root level, leaving health workers and communities disempowered. Decision making is too much concentrated at the district level. Motivation of staff to perform is not always as required for good performance (URT, 2009). To some extent, some policy development process are initiated and pressurized by development partners and donors (Mboera et al., 2009), with little ownership of the respective programmes.

The current local government structure does not provide adequate autonomy to local governments. They are unable to make important decisions independently because many legal provisions make the local government dependent on the Central Government. The local governments must have the unfettered power to serve the local people rather than act as agents for the central state as a pre requisite for D by D to be successful in sustainable grassroots social development (Ngware & Haule, 1993). The limited autonomy and authority of local governments is evidenced by hiring and disciplining mechanisms for local government personnel. Apart from the so-called "casual labourer", local authorities lack the power to discipline or dismiss or unruly personnel (Ngware & Haule, 1993). There is no evidence if Service Commission, which is the appointing and disciplinary authority, is connected to the local authorities, because the local authorities "employees" are subject to the control of the district/municipal/city directors who are appointed by the president (Ngware & Haule, 1993).

Wards can act as a bridge between district councils and villages due to the fact that each ward has a councillor who can represent the interest of his/her constituency in the district council meeting (Mniwasa & Shauri, 2001). However, the decision making process in local authorities is mainly controlled by local bureaucrats (Council officers in collaboration with District and Regional Commissioners) and not the elected members (councillors), contrary to an ideal assumption that elected members of the local government make decisions while local bureaucrats implement those decisions (Kessy, 1999). Studies conducted in Moshi and Lushoto district have revealed that, most of the decision making process, from agenda setting to the implementation stage, is mainly controlled by local bureaucrats. This phenomenon is attributed to the central government's reluctance in emphasizing high quality councillorship (Kessy, 1999; Mniwasa & Shauri, 2001). The level of interaction between councillors and council officers in the decision making process is minimal. Moreover, in most cases, the council officers are better educated and more experienced in administrative issues as compared to the lowly educated councillors (Kessy, 1999). In principle, ward councillors are expected to represent community voice in various village, ward and district council decision making bodies. Hence, their low level of education threatens their efficient role.

The district government's control over revenues collected through CHF hinders the capacity of responsible ward or village authorities to make decision in solving immediate problems such as

facility maintenance (Mushi, 2009). As such, local government positions are often undermined, and this leads to turnover, lack of morale and commitment to innovate or deal with local issues creatively.

Contrary to the promising elements of D by D, health workers from several councils have reported a lack of sufficient as pointed out below (MFAD, 2007).

- Very specific guidelines and ceilings for allocation of funds to different budget lines sometimes hamper planning to respond local needs (as mentioned in nine out of 16 district self-assessments and in the visited councils);
- Human resources planning is heavily dependent on centrally decided staffing levels, which take into account neither population served or utilization of HFs;
- Seven out of 16 district self-assessments (of which six were rural) reported that district autonomy is restricted by the MOHSW, although CHMT members in the case study districts supported the recent recentralization of recruiting;
- Councils also feel restricted in their ability to procure drugs and supplies, as they can only use their MOHSW allocation to procure from Medical Stores Department (MSD).

FURTHER ROLES TO BE PLAYED BY DEVOLUTION IN HEALTH FACILITIES AND PLANNING

Since, the success of health service delivery depends on the involvement of local people; health programmes should ensure that they are involved in planning and management from the conception to implementation. Health programmes should be tailored in a way that local people get immediate economic benefits by engaging themselves in implementation efforts. Besides provision of health services, the government should strengthen the participation of the private sector, NGOs and CBOs in the management of health services.

In accordance with the government's commitment to D by D, the Local Government Authorities (LGAs) are expected to take full responsibility for planning, budgeting and management of government services, including health. A separate window for rehabilitation of health facilities has been established in 2008 (URT, 2009). Moreover, further decentralisation of power and decision-making is necessary from district level to facility level, as well as expanding RHMT mandate over CHMT functions. Financial transparency must be secured at all health facilities and health facilities should open and operate their own accounts for health insurance schemes and user fee funds.

In particular, more effective management of human resources is an urgent requirement. Tanzania needs to employ more of the trained health sector staff it produces and to ensure those working in the system are managed more effectively by strengthening supportive supervision to both public and private facilities, involving clinical skills in the supervision checklist. Facility governing committees should be established or strengthened to broaden and deepen the community's ability to influence priorities.

To improve the planning process the budget ceilings should be communicated early. The proposed Health Management Information System strengthening project should be fast tracked to provide better information for planning. Other initiatives include creation of enabling environment for to overcome persistent irregular supply of essential drugs necessary at levels of the health delivery system to minimize unnecessary referrals (URT, 2007). With respect to

financial decentralisation, it is important that public financial management at the periphery is improved through capacity building (MoHSW, 2009).

There is a need to devise participatory innovative and at times unconventional mechanisms, at district, ward and village levels to ensure timely and a smooth referral system while maximizing on locally available facilities and skills within districts in order to ensure continuity of care. This will ensure organized and timely access to specialized referral services for populations within all districts across Tanzania.

Lessons learnt

1. The reform process spearheaded by D by D has made significant progress in decentralizing planning, budgeting and management of health services to council level, although important controls by the centre remain.
2. Institutional bodies, such as Council Health Management Teams, Primary Health Facility Committees and Hospital Management Committees are in place and functioning, but Council Health Services Boards and Hospital Governing Committees are weak or nonexistent and need to be strengthened and empowered.
3. There is not yet an optimal fit between the composition of the CHMT and sector reform strategies.
4. Councils are engaged in the Comprehensive Council Health Plan process in a meaningful way. However, the process is complex and time-consuming. Planning remains dominated by local health system managers and has neither been made truly participatory, nor bottom-up. The CCHP is more a budgeting tool than a dynamic planning tool.
5. Supportive supervision of public, FBO and private facilities by CHMTs has improved quality of care, but remains more focused on administrative and logistical matters than on improving clinical practice.
6. At least as summarized in the Essential Health Interventions Package (EHIP), there has not been an effective prioritisation of the components of publicly financed health care.
7. There is an opportunity to increase the level of collaboration between the health sector and, for example, activities in water and sanitation, education, hygiene and nutrition in an effort to improve health outcomes at local level.
8. There is no evidence of significant improvements in the effectiveness of the referral system during the evaluation period.
9. More emphasis on increasing productivity could lead to more efficient use of human resources at local level.
10. There is a need for innovative advocacy of D by D in health and other sectors, at all levels, targeting all stakeholders, down to the community.
11. There are prospects for further achievements through D by D. However, this deserves systematic research, timely information sharing and appropriate actions.

CONCLUSION AND WAY FORWARD

Decentralisation by devolution should encompass improved administrative, political, financial and participatory planning, resource allocation and management of services at all spheres of local government from the centre to regions, districts, down to “*mtaa*” ,reflecting the priorities of local communities and empowering them (CS, 2000). Local governments should improve the efficiency of their programmes for economic development, poverty reduction and social services and promote sustainable development.

Transparency and communication is essential to a vibrant democracy including the declaration of interests. The sharing of knowledge and information between various spheres of government, NGOs, civil society groups and the community at large is integral to good governance. Moreover, fiscal decentralisation is a central component of regional and local self-government without which accountability and performance are ineffective. Fiscal autonomy means that local

governments should have the capacity to raise resources themselves to reduce dependence on central government.

The role of capacity building at the local level is a key issue particularly where local government is not well entrenched as the case of Tanzania. Training for officials and especially for councillors is a priority. Nonetheless, civic education is an essential element in enhancing the democratic process as it empowers citizens to make more informed choices about their priorities.

The following areas need to be given due importance in order to strengthen the achievement of the reforms:

Capacity Building strategies: Have a comprehensive specific capacity policy based on the principles of inclusiveness, mutual peer partnership, gender sensitivity, innovativeness and creativity. The government should create specific institutional arrangements for creative and innovative capacity building..

Resource Mobilisation: It is important to create adequate incentives for Local Governments for mobilizing Local revenues, utilisation and accountability in connection to all sectors including health services.

Elected Women in Local Government: Develop mutual support among women should be developed and a support to economic and political empowerment of women should be strengthened. Within the context of participatory budgeting local government should make budgets that are gender sensitive. The Government should endeavour to abolish gender discriminatory laws. Implementation of measures enhancing women's education including awareness of human rights laws and how to use them should be promoted. Governments should support elected women leaders in local governments to form a network at local government, national and regional levels to bring them together and provide a forum through which issues and challenges confronting them in their work can be addressed in a sustainable manner.

Partnership and Decentralised Cooperation: PMO-RALG should give support by way of policy and legislation to Partnership and Decentralised Cooperation; and should develop Guidelines and institutional framework for Partnership and Decentralised Cooperation. Governments should open and broaden up the scope of the cooperation to include CSO, the Private sector and other non state actors.

In conclusion, it is imperative and logical that the programme's current and future gains need to be consolidated and sustained in order to ensure the reform process remains "alive", continues to win the hearts and minds of the stakeholders and incrementally and systematically contributing to the realisation of D-by-D's goal and objectives. All that is needed is to consider a set of social, political, economic, environmental and technological factors and the dynamic "reform regime" in a very flexible and pro-active manner. Equally important, LGRP should always try to learn from others even if they seem not to agree with the programme and should always argue its case, convince, demonstrate conviction and dedication to D-by-D and put themselves in the position of those who do not support LGRP and find out their reasons for doing so. In this way, both sides will be winners!

The existing political will and commitment from the highest level provides an asset of golden opportunities that should not be taken for granted but be utilized for more gains and indeed more concerted efforts are needed to win politicians/policy makers at various levels, including sub-district/municipal level. Undoubtedly, a strategic, flexible and coherent framework is needed for this to happen (and be sustained).

In line with the Joint Government – Donor Review, D by D must become more outward focused, strengthen its networking and develop more effective ways of achieving greater prominence, influence, acceptance, negotiating strategies and impact on key decision makers at all levels (ibid). In our view, and we understand it is also the Government view, a Policy Advisor (PA) be recruited whose responsibilities will include providing closer facilitation of the programme's work to embed the effective implementation of D-by-D across the Government.

The programme urgently needs a coherent and effective communication strategy that will provide an effective link among various stakeholders, including the sub district/ municipal level and ordinary citizens who will be informed regularly on the implementation process of various activities under LGRP.

Where space and time allow, the programme could initiate innovative advocacy strategies, such as monthly or quarterly dialogue so as to provide additional space for additional voice on how best various stakeholders could contribute and share experiences in consolidating the role of D by D in health and other social service at all local government levels.

The role of systematic research is vital in generating quantitative and qualitative evidence on various issues, with a view to identify the gaps and lessons for more achievement of D by D. The areas deserving attention include, at least, but should not be limited to establishing the following

(a) the experiences of Government, LGAs, civic groups and the private sector with a view to develop the best way to move the reform process forward jointly. This will also avoid a situation in which each reform process is attempting to send a different signal to the stakeholders and the public in general. What is needed is to ensure all the reforms provide a direct impact on improving economic growth, enhancing service delivery and reducing poverty. (b) how the D by D process is perceived by district level managers, or if the restrictions imposed on how the transfers should be allocated are considered prohibitive, or if the districts have the capacity to plan and allocate the resources appropriately. (MoHSW, 2009)

(c) how to achieve participatory planning and management of health services, devolved from council to the lowest levels of health service delivery structures

Finally, the impetus of future local government reforms should be geared towards effective devolution of powers, clarification of mandates and giving ownership and access to prerequisites for empowering local governments to manage the health facilities and services.

REFERENCES

- CS (2000) Commonwealth Workshop on Decentralisation and Devolution. Commonwealth Secretariat. A Workshop in the “*Deepening Democracy*” Series. Edinburgh.
- HSSP (2008) *Health Sector Strategic Plan III*, Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.
- Kessy, A.T. (1999) The dynamics of Decision making in Local Government in Tanzania. The Case of Moshi and Lushoto District Councils. University of Dar es Salaam.
- MFAD (2007) Joint External Evaluation of the Health Sector in Tanzania. Ministry of Foreign Affairs of Denmark.
- Mmari, D.M.S. (2005) Decentralisation for Service Delivery in Tanzania. President's Office, Regional Administration and Local Government. United Republic of Tanzania. Workshop on Building Capacity for the Education Sector in Africa. Oslo, Norway.

- Mniwasa, E. & Shauri, V. (2001) Review of the Decentralisation Process and its Impact on Environmental and Natural Resources Management in Tanzania: Lawyers' Environmental Action Team.
- MoHSW (2008) Health Sector Performance Profile Report, Mainland Tanzania July 2006 – June 2007
- Ngware, S. (2005) Is the local government reform programme impacting positively on the lives of Tanzanians? Paper presented to ESRF Policy Dialogue Seminar.
- Ngware, S.S. & Haule, M. (1993) The forgotten village in Tanzania. Institute of African Studies, Hamburg.
- PMORALG (2004) Local Government Reform Programme: The United Republic of Tanzania Prime Minister's Office, Regional Administration and Local Government. Available at: <http://www.pmoralg.go.tz/lgrp/index.php>. Accessed in 2nd December 2009.
- URT (2007) Comprehensive Council Health Planning Guidelines. Ministry of Health and Social Welfare and Prime Minister's Office, Regional Administration and Local Government. Available at <http://www.pmoralg.go.tz/lgrp/index.php>.
- URT (2009) Health Sector Performance Profile Report 2009. Updated: Mainland Tanzania July 2008-June 2009. Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.
- URT (2009) The Status of Implementation of Decentralisation by Devolution on Mainland Tanzania and the Way Forward. A paper presented by the Permanent Secretary, PMO-RALG, during the National Convention on Public Sector Reforms, 17-18th June 2008, Dar es Salaam, Tanzania.

CHAPTER 4: THE POTENTIAL OF DIFFERENT HEALTH FINANCING OPTIONS

Summary: Health service delivery continues to remain largely financed by public resources through the government budget. Other sources of funding health sector include pooled funds, private contributions and user fees. Significant achievement in decentralizing health service delivery and funding to the local levels have been recorded, with more than 40% of government health budget being spent at the LGA level. This has significantly helped to improve health services in rural areas as well as improving health indicators. There is also a significant funding to the health sector which is off-budget, through HBOs, CSOs, NGOs, for which health services are provided for free or beneficiary pay directly. Foreign financing, which targets more on development activities, is a significant amount of the health budget but it is declining overtime. Currently resources allocated to health sector, for instance in the 2009/10 budget, fell short of requirement by HSSP III and further below the estimated requirement by WHO and Abuja Declaration on per capita terms. More efforts are need especially increasing local funding of health sector development budget, given the unreliability of foreign funding. The Government needs to address the issue of disparity among district in terms of resource allocation, which is a result of resource allocation based on existing number of staff and facilities among districts. Sticking to the formula allocations of the health recurrent block grants among LGAs is important. The Government needs to find a right balance in allocating resources among the three levels in the health sector – namely National, Regional, and LGA. There is also need to address shortages in budgetary allocations for health sector infrastructure maintenance, which currently stands at less than 1% of the total health sector budget. User fee revenues shouldn't necessarily be considered in terms of their contribution to the overall sector resource envelope as this will remain small, but be viewed in terms of improving the availability of flexible funds at the facility or council level where they often represent the major source of discretionary funding for health facilities. There is need for streamlining and improving the pre-paid and insurance schemes, both to improve coverage and to reduce reliance on fees at the time of care-seeking. Moreover, there is a need for regulation of the health insurance industry so as to be able to get a consistency between the different schemes. Community health fund overage needs to be expanded to the rural areas, as it is a recommended way of funding health service provision especially for rural poor. The government should improve information and sensitization in order to ensure that the population is cognizant of the availability of free health service provision for some groups while at the same time acknowledging the continuous challenges that the sector confronts in the areas of funding and human resources for health.

BACKGROUND

Public health service delivery has been financed largely by public resources through the government budgetary allocations. Apart from use of budgetary resources to fund health service delivery, use of user fees, cost sharing, and use of pooled funds like insurance funds has also been adopted as alternative options. This is a good move given the fact that the limited resources available for the government budget and the growing needs of health services delivery due to changes in demographic and epidemiological profiles as well as impact of diseases like HIV/AIDS, malaria and tuberculosis.

The health sector funding through the government budget has seen significant progress since 2000, when the PRSP was adopted. The funding to the health sector increased progressively over the recent past, with significant funding also channelled to the Local Government Authorities (LGAs). Despite the increased budgetary allocation to the sector, the Abuja Declaration has not been met. For instance, since financial year 2003 (FY03) to FY10 budgetary allocation to health sector has been hovering around an average of 10-11% of the total budget. The allocations have also been short of required allocation of \$9 on per capita terms.

Although the per capita spending has been increasing over the review period, the per capita health spending is still low, at an average of about TShs 14,215 in nominal terms. In real terms (2001 constant prices), it is still below TShs 10,000. In Dollar terms, the average per capita health spending is about US\$ 11.23 over the review period. This is far below the WHO estimated per capita spending of US\$34. Also, the level of spending is still far short of the current Health Sector Strategic Plan (HSSP) III projection of achieving US\$15.75 per capita spending by the end of this financial year (2009/10).

The Health Sector' has also remained behind in addressing other challenges that continue facing the sector, including, the shortage of human resources for health; the provision and strengthening of preventive health services at all levels through health promotion, and the control and prevention of communicable and non-communicable diseases, including malaria, tuberculosis, HIV/AIDS and emerging and re-emerging diseases such as the H1N1 flu virus. In 2009/10 for instance the MTEF focused on ensuring the availability of primary health care services with an effective referral system, action oriented research and promotion of community participation and involvement. The issues of availability of quality, safe, effective and affordable drugs, vaccines, contraceptives, medical diagnostic supplies and equipment require attention.

The objective of this chapter is to assess how the health sector has been financed over the past ten years (1999/00 to 2009/10) and the impact on the health outcomes in Tanzania. The period of the assessment covers the PRSP and the NSGPR I. The outcome of the assessment will provide key inputs for development of NSGPR II and the next direction in terms of health sector financing and achievement of NSGPR II targets and the MDGs. Specifically, this Chapter aims at:

- (i) Evaluating the existing health financing system in Tanzania, including its sustainability.
- (ii) Assessing the extent to which recent reforms have impacted on inequities in health services provision in the country, especially decentralization policy.
- (iii) Recommending some ways of improving health financing and health service provision in Tanzania in order to achieve NSGPR II targets and MDGs targets..

FUNDING OF HEALTH SECTOR

Tanzania is following a mixed type of financing the health system. It is largely relying upon a tax financial system of which about 70% is obtained from public financing. Taxation is complemented by user fees in the form of cost sharing in government health facilities. The Ministry of Health has also introduced CHF and NHIF scheme. In line with fiscal decentralization the MOHSW has developed a formula for resource allocation from central to local government. The formula is used for government grant as well as basket funds. Domestic funds drive the recurrent budget, while the development foreign funding more heavily influences the capital budget. Off-budget funds are predominantly foreign; with the domestic contributions made by cost-sharing scheme in the sector (excluding NHIF) contributing 10–20% or more than 60% of the other charges of total projected off-budget resources (Mboera et al., 2009).

Overall Trends in Health Sector Budget

The large share of health sector funding comes from the government budget, through allocations to MoHSW, PMO-RALG, NHI and direct transfers to LGAs. The budgetary allocations to the sector have increased of the recent past in absolute terms, and share of total budget, but have declined as percentage of GDP. Despite the increase in allocations to the sector it still remains short of the commitment of Abuja Declaration. It is also short of requirement for delivering required health services given the growing need of health services due increased population and emergency and re-emergency of new diseases, such as H1N1 flue virus. In addition, funding to

health sector has also been provided by user fees, pooled funds (HIF & CHF) in which case they are captured as subventions or retentions to/by specific public enterprises. There is also a significant funding to the health sector which is off-budget, through CSO's, and Non-Governmental Organizations (NGOs), for which health services are provided for free or the beneficiary pay directly. The health services delivery financed through off-budget is estimated to be as high as \$2 per capita in Tanzania.

The share of health sector budget in the total government budget (excluding interest) has hovering around 11-10% during FY05-FY10 period. It has also slightly declined from 2.5-2.7% over the same period (Figure 1). The decline has been driven by the decline in foreign funding to the sector. The decline in foreign funding and the heavy reliance of the sector's development budget on foreign funding raises a concern on the sustainability of the sector funding over the medium-long term. So what are the dangers taking into consideration that over 80% of the funding for HIV/AIDS, malaria and TB are donor funds?

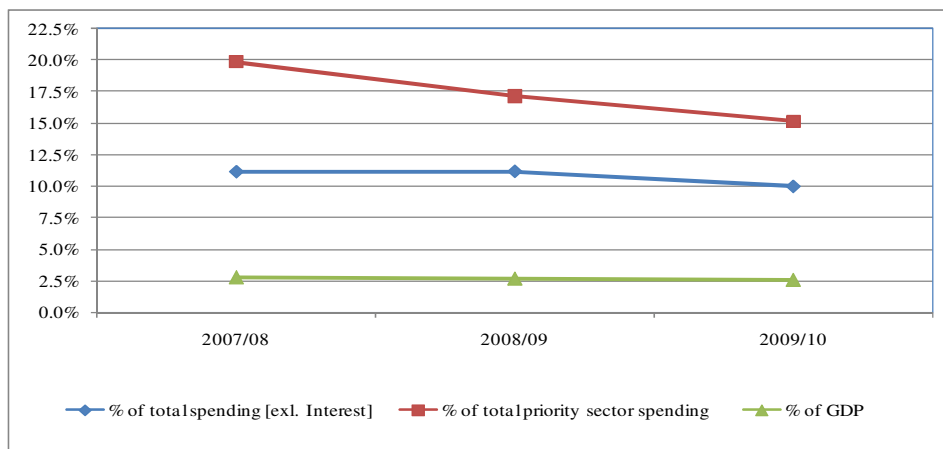


Figure 4.1: Health Sector Budget

Trends in Sector Budget Composition

Recurrent and development budgets of the health sector have significantly increased over the past five years... There has been an increase in the health sector budgets, with development budget doubling over the past five years (Table 1). The recurrent budget has also increased but in a slower pace. The increase in the recurrent budget has been driven by a significant increase in personnel emolument (PE) due to the government effort to address the shortage of human resources for health. Development budget increase has been driven by the government efforts to expand access through construction and rehabilitation of the existing health infrastructures. These include national hospital, referral hospitals, regional hospitals, district hospitals, health centres and dispensaries. Other infrastructures include training institutions as well as the expansion of antiretroviral (ARV) programme.

Table 4.1: Health Sector Budget Composition (in TShs)

	Budget Estimates				
	FY2005/06	FY2006/07	FY2007/08	FY2008/09	FY2009/10
		Original		Original	Original
RE Expenditure	275,501,672,100	360,839,599,000	384,264,818,00	461,759,608,858	491,436,596,761
PE	26,863,855,700	58,737,588,500	68,136,307,000	255,302,000,761	264,624,991,166
OC	248,637,816,400	302,102,010,500	316,128,511,000	206,457,608,097	226,811,605,595
DE Expenditure	137,792,553,400	130,604,822,400	229,702,519,400	291,098,023,601	305,009,919,839

Total	413,294,225,500	491,444,421,400	613,967,337,400	752,857,632,459	196,446,516,600
-------	-----------------	-----------------	-----------------	-----------------	-----------------

Source: Ministry of Finance and Economic Affairs Budget Books

The increase in health sector PE budgets have also come at the expense of other charge (OC) budgets which have declined both in absolute terms and as a share of sector budget. The decline in OC budgets comes in parallel with insignificantly small share of the sector but which is allocated for health sector infrastructure maintenance. The share of the sectors budget spent on infrastructure maintenance is less than 1%. This is a serious challenge to the sector as it signals the possibility of losing the existing and currently constructed infrastructure or losing more money in order to recover it.

Despite the nominal increase in the recurrent and development budgets, the relative shares of the sector budget have declined over the recent past, with a 1% point decline in the 2009/10 compared to the 2008/09 budget. As it will be noted later in this Chapter, PE, OC and development expenditure shares of the health sector expenditure at the central ministry and regional levels have remained largely unchanged over the past few years. On the other hand, the composition in health budgets of LGA has significantly varied in favor of development budget which have doubled over the same period. The point of attention here is to find the right balance between PE, OC, and development budgets in order to obtain optimal balance for better health outcomes.

Looking at health sector funding by institutions, a significant progress has been made in directing more funding to the lower levels especially in LGAs. This is consistent with the NSGPR objective of promoting primary health services. It is also consistent with the D by D policy implementation. For instance, the share of MoHSW in the health budget has declined from 55% in 2007/08 to 46% in 2009/10 while the share of LGAs in health sector budget has increased from 23% in 2007/08 to 43% in 2009/10. The share of regions in the health sector budget has declined over the same period. The shift towards allocating more resources to the LGAs is a move towards a right direction in the sense that most of the poor people who need health services (and can't afford to buy it from private providers) are located in the rural areas. This shift is also important and right one in the sense that it will strengthen LGAs which run the majority of Primary Health Care Facilities.

Despite the significant share of the total health sector budget being transferred to the LGAs, development budget remained significantly under the MoHSW. On average, more than 60% of the sector's development budget has been allocated to the MoHSW. Procurement of drugs, which is mostly centralized through the MSD, is one of the largest items in the sectors development budget. In addition, rehabilitation of national and referral hospitals also constitute yet another important item, which are also budgeted by the MoHSW.

Table 4.2: Health Sector Budget by Institution (in percent)

Institution	2007/2008			2008/09			2009/10		
	Recurrent	Development	total	Recurrent	Development	total	Recurrent	Development	total
HIF	8.6%	0.0%	5.5%	7.4%	0.0%	45%	6.0%	0.0%	3.7%
MoHSW	48.4%	66.0%	54.6%	41.5%	67.6%	51.7%	42.6%	51.9%	46.1%
PMO-RALG	0.0%	1.4%	0.5%	0.0%	8.5%	33%	0.0%	0.3%	0.1%
Regions	7.4%	32.7%	16.3%	69%	0.0%	4.2%	8.1%	0.0%	5.0%
LGAs	35.6%	0.0%	23.0%	33.1%	23.9%	29.5%	40.6%	47.9%	43.3%
Others	0.0%	0.0%	0.0%	11.1%	0.0%	6.8%	2.6%	0.0%	1.6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Ministry of Finance and Economic Affairs

The nature of overall health sector spending is predominantly recurrent spending as opposed to capital spending. On average, in the last two years slightly higher than 10% of the total health

sector budget has been spent capital while about 90% being spent on consumption expenditures (Figure 2). Despite the large share of health sector's development being financed by foreign resources, capital spending have largely remained small but at the same time financed mostly by local resources. Procurement of drugs and other hospital supplies, which are predominantly current spending are classified as development budget because they are funded by foreign resources. This helps to show that there is more spending in terms of medical supplies to the people which is a short run investment as compared to the construction of new health centres, renovation of the existing ones and also supply of capital equipments to the different health centres around the country which is a longrun investment and one that is needed in order to sustain development of the health sector.

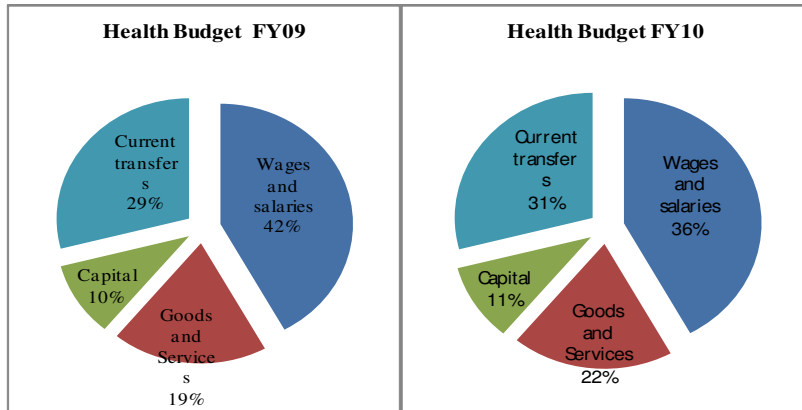


Figure 4.1: Health sector budgets by nature of spending

Wages and salaries, current transfers to LGAs and PEs, and procurement of goods and services constitute about 90% of the total health sector budget. This distribution highlights the critical importance of human resources, and medical supplies in delivering health services. The high share of allocations to current transfers also highlights the importance of LGAs in delivering health services, especially in the rural areas. The question remains on how much should be allocated in order to preserve the existing and newly constructed infrastructures, given the minimal amounts (usually less than 1%) being allocated currently.

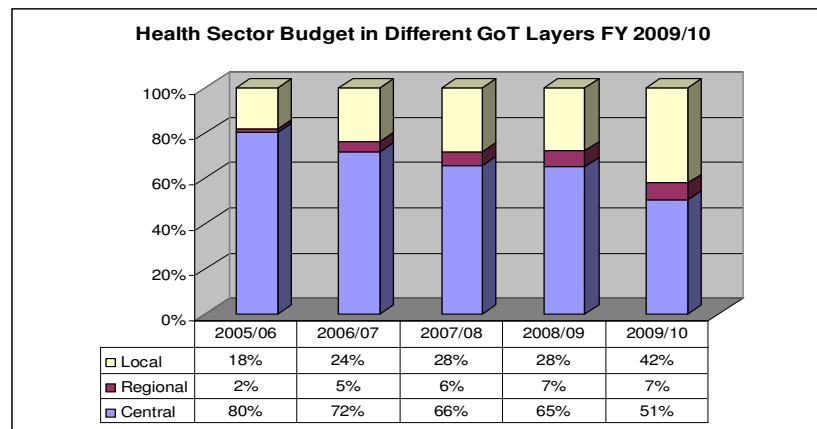


Figure 4.2: Health Sector Budget allocation among Different Layers

The share of the health budget allocated to LGAs has increased significantly while for the regions it remains stable and for the central ministries is on the decline. Despite the increased allocations to LGAs, majority of the sector funds are still allocated to the MoHSW budget. While

allocations to the MoHSW and PMO-RALG have decreased from 80% to 51%, allocations to LGA and regions have increased from 20-49% between 2005/06 and 2009/10. Certainly, this is the outcome of implementation of the D by D policy together with some new activities planned at local level. In FY 2009/10, development budget for LGAs includes for example the construction of hostels for staff especially in the underserved LGAs. These include for example the allocation of MMAM and the LGCDG shares of the health sector budget. Table 2b provides further information on allocation of the health budget among different layers of the government.

Table 4.3: Health Sector Budget allocation among layers of Government of Tanzania

	2005/06	2006/07	2007/08	2008/09	2009/10
Central	331,600,276,700	352,283,765,700	402,681,710,600	489,619,571,632	403,141,315,200
Regional	6,955,040,600	22,967,334,200	37,194,814,200	52,625,172,800	57,266,871,800
Local	74,738,908,200	116,193,321,500	174,090,812,600	210,612,888,027	336,038,329,600
Total	413,294,225,500	491,444,421,400	613,967,337,400	722,857,632,459	796,446,516,600

Source: MoFEA Budget Books

Local and Foreign Funding of the Health Sector

Local resources from the budget continue to play a key role in financing the health sector in Tanzania. The contribution of local resources in providing health services has also increased over time; though with slow pace (Figure 4). Foreign financing is a significant amount of the health budget but it is declining. The foreign financing of the health sector is more on development activities, although most of these activities are current spending in nature. The amount of local resources going to the health sector has increased slightly while the share provided by foreign financing has declined for the past two years and is now below the share provided by donors in 2005/06 (Figure 5).

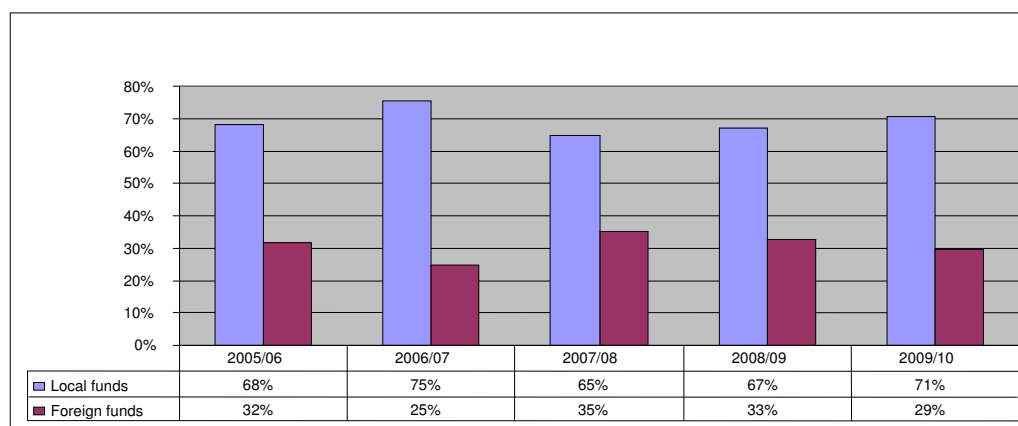


Figure 4.3: Sources of health Sector Budget 2009/10

In particular, there has been a consistent decline of foreign funds going to the sector through PMO RALG over the past two years. Whereas the share of foreign resources in MoHSW has gone down by 26%, PMO-RALG health foreign resources have recorded a 60% decline between FY 2008/09 and FY 2009/10.

Table 4.4: NHIF Income and Reimbursements 2004/5 to 2007/8)

	2004/2005	2005/2006	2006/2007	2007/08
Contributions (Million TZS)	24,670	31,733	45,516	55,472
Total income (incl. Income from investments and others) (Million TZS)	28,610	39,142	56,884	72,168
Claims lodged (Million TZS)	4,900	5,400	9,600	10,800
Percentage of claims lodged against total income of NHIF	17.13%	13.80%	16.88%	14.97%
Reimbursements paid (Million TZS)	4,100	4,900	8,200	10,200
Reimbursement rate	83.67%	90.74%	85.42%	94.44%
Percentage of funds paid out to health services against total income of NHIF	14.33%	12.52%	14.42%	14.13%

Source: Ministry of Health and Social Welfare, Health Sector Programme Support (2009)

Complementary health financing is becoming increasingly important in health sector financing, but there is a significant amount of unused funds both at the NHIF, and HSF. Total receipts for HSF almost doubled between 2006/07 and 2007/08, and about 89% of the receipts were used for health service delivery in 2007/08. NHIF contributions have also grown significantly from TShs 45.5 billion in 2006/07 to TShs 55.5 billion in 2007/08 (Table 4). Despite such an increase, significant amount of resources are unused both at the NHIF and HSF. This review has found that less than 15% of NHIF annual income is utilized by health facilities. Also, although cost sharing collections are perceived to be insignificant, the LGA sub-study has found that cost sharing funds exceed Other Charges (OC) allocations in some LGAs. In total, HSF was approximately 2% of OC allocations to the LGAs in 2006/07, and increased to about 4% of the OC allocations to the LGAs in 2007/08. The expansion of the CHF could be more expanded to the rural areas around the country, as it is recommended way of funding health service provision especially for rural

ALTERNATIVES SOURCES FOR HEALTH FINANCING

User fees

This is a subsidized amount of money that is paid at the point of health delivery. User fees were introduced in Tanzania at the hospital level in 1993, as part of a broader package of reforms, referred to as the Health Service Fund. Further charges were introduced in 1999 through the Drug Revolving Fund (DRF), again at the hospital level. With the piloting and subsequent roll-out of the Community Health Fund, they have subsequently been introduced at lower level facilities in a number of councils. Exemptions and waivers were an integral part of the design of the user fee system. Fees are viewed as a necessity for the introduction of social and community health insurance as they provide the incentive to enrol in alternative, less regressive schemes. Reports from hospital management teams indicated that fee revenues contributed 20-65% of revenues, with funds used to improve drug availability and other medical supplies, for minor rehabilitation, staff motivation, and transport, among other things.

Social Health Insurance

A move towards SHI is a core element of the government's health financing policy. The NHIF was established in 1999, began its operations in 2001, and currently covers all public servants at both central and local government levels together with up to 5 other family members. Recently, the scheme has widened its membership coverage to include Members of Parliament and Councillors. The National Social Security Fund (NSSF), to which all formal sector workers contribute, is in the final stages of developing a health insurance benefit package for its members i.e. the Social Health Insurance Benefit.

NHIF is funded through a 3% employee payroll deduction matched by Government contribution. The scheme has a defined benefit package, and members are free to access services at any accredited facility of their choice. Government facilities are automatically accredited while faith-based and private providers have to conform to MoHSW standards. The fee for services has been adopted as the provider payment mechanism. It was stated that 88% of the claims had been reimbursed at January 2005, with providers using the revenues to improve service quality. The private sector share of claims is slightly higher than that of the public.

The scheme is administered by an independent body answerable to the Ministry of Health whereby the administration costs are limited by law to 8%. The NHIF is slowly becoming a more important player as a purchaser of health services, but its membership is still limited.

The stated benefits of the scheme included assurance of access to services for members, a shift in attitude from apathy to ownership, and competition between providers resulting in improved quality. Problems included limited funds, inadequate numbers of participating pharmacies, and failure of some public facilities to meet standards. Once the NSSF Social Health Insurance scheme is in existence, the membership and benefit packages are likely to be basically similar to NHIF, but provider payment will be based on capitation with the potential advantages of linking members to specific providers, and providing a predictable cash flow.

Community health fund

The CHF was piloted in Igunga district from 1996, and subsequently rolled out to other districts. CHF is a voluntary scheme which enables a household to pay when they have funds rather than at the time of illness, with members entitled to access services up to and, in some council, including the district hospital level. Membership premia are decided at the council level and revenues from premia matched by a grant from government to respond to that which is found in the NHIF for civil servants while enhancing equity between the two schemes.

The CHF membership charges range between TShs 5,000 and Tshs10, 000. These funds are managed by the Council Health Services Board and the health facility committees. CHF revenues accounting for up to 20% of the value of Other Charges (non-salary government funds) in some council, are included in Council Comprehensive Health Plans, and are used largely for quality improvements. Technical support has been provided in some regions to create “CHF plus”, with a regional facilitation centre. Additional support to the scheme comes from the Tanzanian Network of Community Health Funds. Only 5.6% of Tanzanian population is enrolled in CHF against the target of 80% enrolment by 2015. The CHF apparently has the potential to create demand for quality services (empowerment of users), which poses a challenge for the Government to improve quality of health care so as to encourage people to join the scheme.

Similar to rural CHFs, urban schemes through “*Tiba kwa Kadi*” (TIKA), aiming for a 10% coverage have been introduced. The UMASIDA and VIBINDO joint health schemes in Dar es Salaam are some of the alternative models aimed at extending social protection to the poor and excluded people living in the rural areas. These schemes focus on mainly the informal sector employees, with advantages including more flexible membership options, for example, the possibility of a household, a group or an individual.

Despite the positive perception of the benefits of the CHF schemes, enrolment still remains very low even in districts with functioning community participation. Possible reasons for low enrolment in CHF:

- misconception of the idea of solidarity; if someone in the household doesn't fall sick in a year, the contribution is considered as a loss;

- poor marketing/advertisement, lack of information and poor mobilization;
- limited package of care; CHF membership not valid at referral level where it is needed most;
- quality of health services is not satisfactory;
- CHF card not portable, not valid beyond district borders;
- CHF card rarely accepted at faith-based health facilities;

Exemptions and Waivers

Exemptions and waivers were an integral part of the user fee policy introduced in 1994 and, by extension, of the CHF. An exemption is a constitutional entitlement to free health care services, which is granted to individuals who automatically fall under the categories specified in the cost sharing operationalisation manual. These include maternal and child health services (including immunization of children); children of ≤ 5 years of age; individuals suffering from tuberculosis, leprosy, paralysis, typhoid, cancer, HIV/AIDS; cholera, meningitis, plague, and long term mental disorders.

A waiver is granted to those patients who do not automatically qualify for statutory exemptions but are in need of the same, and classified as 'unable to pay, in the operationalisation manual (as from the CHF design manual). Where drugs and supplies are available, patients apparently do not need to spend additional money at private pharmacies, and drug and supply outlets or at the health facility itself.

The exemption and waiver system has had various challenges with in the community as the people benefiting are not the right group that was being targeted and these include;

- Concerns are raised regarding financial barriers to access for the poorest in the community, particularly recognizing that the existing physical and social barriers already reduce uptake of critical services. At the same time, the fact is that blanket exemptions often benefit the less poor who could contribute to the cost of their health care.
- Weak incentives exist for applying waivers and exemptions as the revenues foregone are not currently reimbursed. For example in Dar es Salaam, these were estimated at TSh800 million (about US\$600,000) over the review period.

However the operation of this scheme can be improved through the following ways;

- Identification of the poorest and most vulnerable persons should be the responsibility of the community, acknowledging that this is a complex issue and that criteria may vary from place to place. National guidelines for local implementation will be critical.
- Identification of those eligible for waivers should take place in advance, rather than at the time of need.
- Improved information and sensitization is required in order to ensure that the population is cognizant of the availability of free services for some groups and services while at the same time acknowledging the continuous challenges that the sector confronts in the areas of funding and human resources for health.
- Reimbursement should be made for revenue losses due to exemptions, and government subsidy of CHF cards for those waived on the grounds of ability to pay. Innovative proposal to address these losses should be examined to include, for example, the development of a pro-poor fund to which contributions could be made by development partners and others.
- More and better data is required, both routine and through population-based surveys, in order to include those people who are not attending health services but are in need of medical care.

Private Providers

Here we are mainly referring to the organizations that exist alongside the Ministry of Health and Social Welfare and are involved in the health sector financing to some extent. Private providers are often divided in two categories; (i) the Private Not for Profit including Faith Based Organizations (FBOs), Civil Society Organizations CSOs and Non Governmental Organization NGOs) and; (ii) the Private for profit providers (PFP).

The Private sector is being responsible for about 40% of the health services provision nationwide (<http://www.moh.go.tz/>). Several FBO hospitals, designated as Council Designated Hospitals (CDH) are funded by government on the same basis as government owned district hospitals. The FBO-based the health facilities are represented by the Christian Social Services Commission (CSSC) and Muslim Council of Tanzania (BAKWATA). CSSC is an Ecumenical umbrella organization established in 1992 with the aim to facilitate the delivery of health and education services. Under the CSSC 607 health facilities (87 hospitals, 68 health centres, and 452 dispensaries) are currently operational. CSSC has received support to increase its capacity to participate in the policy debate, make its own strategic analyses and effectively represent its members.

The Private for Profit health facilities (including hospitals, health centres, dispensaries, laboratories, pharmacies, nursing homes, physiotherapy centres, etc.) are represented by the Association of Private Health Facilities in Tanzania (APHFTA). APHFTA's 400 members form about 11% of the estimated 3500 PFP providers. APHFTA is actively engaged in policy dialogue and has initiated PPP initiatives at Regional and Council level. Besides the formal arrangement of Council Designated Hospitals various informal PPP initiatives have existed for many years.

Most FBO health service providers have been fully involved in the implementation of national public health programmes. Several PFP providers have been included vaccination and disease control programmes for quite some time.. More recently FBO and PFP providers have been involved in HIV/AIDS care and treatment programmes. In 2007 a formal Service Agreement template has been developed by MoHSW, PMORALG, BAKWATA, CSSC and APHFTA, that is to be used by Local Government Authorities (LGA's) to engage FBOs and private service providers. Since the beginning of 2008 about six of these have been signed. Although PMORALG has formally informed the Regional Administrative Secretaries and the District Executive Secretaries that such agreements can be made where a need for service exists, there is still considerable confusion on the degree of autonomy of Council health authorities regarding public-private partnership (PPP) arrangements. CSSC is in the process of training its members in the costing of health services as this will form the basis of their participation in Service Agreements. With the introduction of Service Agreement, PPP arrangements at national, zonal, regional and district levels have started to become more elaborate.

ACHIEVEMENTS AND KEY CHALLENGES

Health Sector Funding

Over the past few years there have been significant achievements in terms of health sector financing. The few important lessons which have been seen over the recent past are:- (i) increased budgetary resources allocated to the sector; (ii) quick decentralization of sector in terms of resources moving to LGAs; (iii) good composition in terms of resources allocations to different levels of hospitals (national, regional & district), (iv) good impact of pooled funding of

health service delivery, especially through the NIF; and good institutional set up including finalization of HSSP III; and many more other positive achievements.

Despite the achievements mentioned above some key challenges which will need to be addressed in order to obtain optimal outcome in health still remains. The challenges are mainly from the financing side of the health sector - (i) of recent budgetary allocations to health sector have been declining, both as share of total budget but also in absolute terms, and especially in FY10; (ii) inequity in budgetary allocations among LGAs continues, with some LGAs receiving 4 time more than others; and (iii) little attention or budgetary allocations for health sector infrastructure maintenance, which in turn impairs public health service delivery. Other challenges include; (iv) not enough attention to development and deployment of human resources (staff) to underserved and remote areas; (v) declining donor funding in the sector which put sustainability of sector funding at risk; (vi) too heavy depending of donor funding, which is also declining, of development budget of the sector and especially in LGAs; and (vii) off-budget funding to the sector which is major disruption to the already limited human resources in the sector.

The shortage of human resources in the health sector, which has been identified as a key issue for the sector, has not been adequately addressed. The total wage bill has stagnated as a proportion of the total sector budget. The incorporation of allowances and hidden costs into basic wages improves the opportunity to manage these resources, but overall, the human resources must be more adequately funded.

The policy of decentralization by devolution means that resources are being transferred to and managed increasingly by the local level. This move must be matched with improved management, with data collection and reporting appropriate to this enhanced role of local authorities. Local governments' public financial management systems will need to be improved to handle the increased responsibilities at this level. There remains a significant reliance on donor funding, especially for development expenditure. As the development budget is increasingly decentralized, risks increase as LGAs do not have their revenue capacity to cope with potential reductions in donor funds

Impact on Health Services Provision

The increased funding of the health sector has also seen significant improvement in provision and accessibility of the health services, both form public and private providers. The capacities of medical staff and health facilities have been expanded significantly in the country. The HBS 2007 shows a significant increase in number of people using and accessing health services in 2007 compared to 2001, especially public health facilities. For instance, in 2007 the use of private health services dropped by 30 percent relative to 2001, while the use of public providers increased by 19 percent (Table 5). This shift occurs across all wealth groups and in all strata. The increased use of public health providers is the result of increased public funding of health sector that has also increased the number of health facilities and health staff and supplies, especially in rural areas.

Table 4.5: Average number of household members attending health service providers

Whether consulted any ¹ provider	Government Providers*	Health	Private Health Providers**
---------------------------------------------	-----------------------	--------	----------------------------

¹ Some households' members consulted more than one health provider. This accounts for the slight differences between *whether consulted any provider* numbers and horizontal sum of those consulted different health providers in each year.

	2001	2007	%	2001	2007	%	2001	2007	%
Poorest	1.51	1.26	-16.6	0.73	0.85	16.4	0.54	0.27	-50.0
2 nd	1.29	1.40	8.5	0.72	0.85	18.1	0.46	0.35	-23.9
3 rd	1.23	1.27	3.3	0.66	0.82	24.2	0.43	0.36	-16.3
4 th	1.12	1.42	26.8	0.66	0.96	45.5	0.43	0.34	-20.9
Wealthiest	1.08	1.01	-6.5	0.61	0.62	1.6	0.47	0.34	-27.7
DSM	0.98	0.87	-11.2	0.52	0.48	-7.7	0.45	0.38	-15.6
Other Urban	1.16	1.18	1.7	0.69	0.75	8.7	0.45	0.37	-17.8
Rural	1.32	1.34	1.5	0.70	0.87	24.3	0.47	0.32	-31.9
Tanzania	1.28	1.27	-0.8	0.69	0.82	18.8	0.47	0.33	-29.8

Notes

* Government health providers include Public dispensary/hospital, Regional hospitals and Community health centres in 2001 but only Public health centre/hospital and public dispensary in 2007

** Private health providers include Private dispensary/hospitals, private doctors/dentists and missionary hospital/dispensary in 2001 and Private health centre/hospital, private dispensary, private doctor/dentist and mission facility in 2007.

*** Excluded are other health providers, which include traditional healers, Pharmacy/chemist and other sources for both 2001 and 2007

The increased public funding, health insurance funds, and waivers in health service provision, have also increased accessibility through reduced cost of health services to majority of Tanzanians. A consideration of medical expenses (Table 4.7) shows that the expenses for health have dropped, in absolute terms and as share of the household budget (Table 6). As the number of consults has remained the same, it suggests that health services have become more affordable by 2007 compared to 2001. Decline in the medical expenses in the share of household budget is the result of increased provision of public health services, especially in rural areas and other urban areas. Also increased use of pooled funding, like NHIF and CHF have also reduced significantly the cost of medical expenses to household that in turn have also increased affordability accessibility to health services.

Table 4.6: Mean real medical expenses (at constant 2007 prices)

	Mean medical expenses (TShs)			Medical expenses as a % share of total consumption		
	2001	2007	% change	2001	2007	% change
Poorest	1057	858	-18.8	2.1%	2.0%	-4.8
2 nd Quintile	1592	1251	-21.4	2.1%	1.7%	-19.0
3 rd Quintile	1829	1618	-11.5	2.1%	1.9%	-9.5
4 th Quintile	2533	2042	-19.4	2.5%	1.8%	-28.0
Wealthiest	3983	2759	-30.7	2.4%	1.7%	-29.2
DSM	3750	2341	-37.6	2.9%	2.0%	-31.0
Other Urban	2695	2006	-25.6	2.4%	1.9%	-20.8
Rural	1971	1537	-22.0	2.2%	1.8%	-18.2
Tanzania	2199	1706	-22.4	2.2%	1.8%	-18.2

The HBS 2007 shows also a slight decline in the overall number of individuals who had been ill or injured in the preceding four weeks. The same survey indicates that a significant number of those who fell ill or injured had consulted health provider, and mostly public health provider in 2007 compared to 2001. The level of satisfaction from public health services has also increased in 2007 compared to 2001.

Table 4.6: Percentage of Individuals Reporting Illness or Injury in the Past Four Weeks by Age Group and Area (HBS 2000/01, HBS 2007)

Age group	Dar es Salaam		Other urban areas		Rural areas		Tanzania	
	2000/01	2007	2000/01	2007	2000/01	2007	2000/01	2007
0-4	33.9	31.6	27.8	32.2	30.4	33.1	30.2	32.9
5-14	15.7	14.4	19.1	19.6	21.9	19.4	21.2	19.1
15-24	12.0	12.1	17.3	17.4	22.2	19.6	20.7	18.5
25-34	18.6	18.5	21.9	22.1	28.1	23.5	26.5	22.6
35-44	20.9	17.6	24.4	24.0	32.7	26.4	30.6	25.1
45-54	22.0	22.2	30.2	30.2	35.4	35.4	33.8	33.4
55-64	27.3	28.0	43.6	32.4	42.0	39.6	41.5	37.6
65+	39.3	47.7	53.0	54.9	55.5	51.1	54.7	51.4
Total	19.4	19.6	23.5	24.4	28.3	26.7	27.1	25.7

Source: Household Budget Survey (HBS) 2007

The HBS 2007 shows that over half of the individuals who consulted any health-care provider saw a government provider (Table 8). The use of government services has increased in all areas, while there is less use of private modern providers and traditional healers in 2007 compared to 2001. The increase in the use of government services is largest in rural areas, suggesting they are increasing the reach to more disadvantaged populations. Use of government services is lowest in Dar es Salaam, where use of the private sector is highest. Around 11 per cent of individuals consulted more than one provider.

Table 1.7: Source of Consultation for Individuals who consulted Any Health-care Provider (2000/01 HBS, HBS 2007)

Year		Dar es Salaam	Other urban areas	Rural areas	Total
2000/01	Government				
	Public dispensary/hospital	40.0	37.9	42.3	41.6
	Regional hospital	2.9	12.2	1.7	3.1
	Community health centre	6.6	8.3	10.9	10.4
	Private modern:				
	Private dispensary/hospital	47.4	31.8	19.3	22.3
	Private doctor/dentist	1.9	5.1	7.6	7.0
	Missionary hospital/dispensary	1.2	6.6	10.1	9.2
	Other:				
	Traditional healer	2.6	5.5	17.2	15.0
	Pharmacy/chemist	4.1	3.1	2.3	2.5
	Other	0.7	0.8	1.9	1.7
	% who consulted multiple providers	6.9	10.3	11.4	11.0
% who consulted any govt source	49.5	57.7	53.8	54.1	
2007	Government				
	Public health centre or hospital	28.8	47.3	23.2	28.0
	Public dispensary	28.2	17.1	43.0	37.1
	Private modern:				
	Private health centre or hospital	8.4	5.7	2.6	3.6
	Private dispensary	33.1	22.6	16.8	19.1
	Private doctor/dentist	0.5	2.6	2.5	2.3
	Mission facility	1.6	2.2	5.1	4.3
Other:					

Traditional healer	1.7	4.3	11.1	9.2
Pharmacy	0.7	6.5	3.7	4.0
Other source	0.9	1.5	6.3	5.0
% who consulted multiple providers	3.4	8.0	12.8	11.2
% who consulted any govt source	56.5	63.4	63.6	63.1

Note: The main panels give the ratio of consultation with any source to individuals who consulted any source; since more than one source could be reported, the columns may sum to over 100%. (Source: Household Budget Survey (HBS) 2007)

The overall satisfaction on the level of health services provided by 2007 had increased compared to 2001. Users don't appear to have problems with health providers during the time of consultation. For all sources of care, two thirds or more of users reported that there was no problem (Table 9). There was a modest increase in the satisfaction of users with government services, and they no longer stand out as the least satisfactory service, as they did in 2000/01. A long waiting time and a lack of drugs and were still the problems most commonly reported problems in government facilities. High cost was the most frequent complaint about missionary hospitals and other private facilities, and this has increased.

Table 4.8: Satisfaction with Service Provided by Source of Care (HBS 2007)

	No problem (satisfied)		Facilities were not clean		Long waiting time		No trained professionals		Too expensive		No drugs available		Treatments not successful		Other	
	2000/01	2007	2000/01	2007	2000/01	2007	2000/01	2007	2000/01	2007	2000/01	2007	2000/01	2007	2000/01	2007
	Any government facility (hospital, HC, dispensary)	66.0	68.9	3.9	2.8	13.7	17.8	2.4	2.2	4.7	4.7	12.8	11.2	6.1	2.1	0.8
Private facility (hospital, HC, dispensary)*	76.9	77.2	1.2	1.9	5.6	4.5	1.5	2.7	11.5	13.6	5.4	2.0	1.8	1.8	0.9	0.2
Private doctor / Dentist	82.2	74.1	0.2	3.3	2.2	1.6	1.1	3.0	10.1	13.9	2.3	3.5	1.2	7.2	1.8	0.0
Missionary hospital/dispensary	78.3	64.9	1.6	2.5	6.9	11.4	1.3	4.7	8.3	18.6	0.9	0.0	4.2	8.2	0.6	0.2
Traditional healer	73.7	78.5	3.7	1.9	3.4	2.2	1.2	1.5	5.7	1.2	2.1	0.6	11.7	15.0	2.5	0.6
Pharmacy/chemist	93.1	66.3	0.1	1.9	0.7	16.0	0.1	4.1	4.1	10.7	0.2	5.0	0.4	8.5	1.3	0.0

Note: Table gives simple frequency for each type of complaint: since more than one problem could be reported, rows may sum to over 100%; all 2007 cells based on >150 observations except private doctor on 129; * private hospital/dispensary in 2000/01 (Source: Household Budget Survey (HBS) 2007)

The overall conclusion from the HBS 2007 is that, rural areas report the highest levels of illness, and adult women reported more illness than men in 2007 compared to 2001. Over two-thirds of individuals who had been ill reported that they had consulted a health-care provider, a similar proportion to 2000/01. Some 63% of the individuals who consulted a provider used a government service, representing an increase in the use of these services which was particularly pronounced in rural areas. Dissatisfaction with government services has also declined. Again, most households are not generally far from primary health care facilities, even in rural areas. The distance to the nearest hospitals appears to have increased since 2000/01, particularly in rural areas.

The overall conclusion from the HBS 2007 suggests that the public funding of health sector will continue to be crucial for some foreseeable future. The government provision of health services will continue to play a significant role, while also quality of services continues to increase. The quick decentralization of health sector has also seen some major improvement in health services provision in rural areas. This calls for government to continue putting more emphasis in making sure that health services are increasingly becoming accessible to majority of rural population, especially through programs like MMAM.

The significant improvement in level of health services provided as well as accessibility does not come without some challenges. The HBS 2007 point out some of the challenges like lack of drugs in some of government health facilities; increased number of people living within 2 kilometres from a health facility; significantly high cost of medical services especially in private providers; and finally lack of qualified medical personnel especially in remote areas or underserved districts. All these challenges call for the government to continue improving provision of health services, especially in rural remote areas, using the public funding/government budget which appears to be the more reliable and sustainable way of funding health service provision in the country.

CONCLUSIONS AND KEY RECOMMENDATIONS

Conclusions

These are directly drawn from the finding of the desk review of various government and other health policy documents. Analysis of the data both financing data (budget and other forms of health financing) and impact or health outcome as drawn from the Household Budget Survey 2001 and 2007, have all contributed to the findings and conclusions of this study. Therefore, the main conclusions of the study are:-

- Health service delivery continues to remain largely financed by public resources through the government budget. Large share of government budget (around 10-11 percent) of the total budget is allocated to health sector.
- Despite the large share of government budget allocated to health sector, the sector remains largely under funded. For instance, health per capita spending of around US\$ 11 is well below the required WHO estimate of US\$ 34. Also, the level of spending is still far short of HSSP III projection of achieving US\$15.75 per capita spending by 2009/10.
- Other sources of funding health sector, including pooled funds, private contributions, user fees, and private contributions have also provided significant funding to the health sector. However, use of user fees and private contributions needs to be more streamlined and accounted for.
- Significant achievement in decentralizing health service delivery and funding to the local levels have been recorded, with more than 40 percent of government health budget being spent at the LGA level. This has significantly helped to improve health services in rural areas as well as improving health indicators.
- There is also a significant funding to the health sector which is off-budget, through HBOs, CSOs, NGOs, for which health services are provided for free or beneficiary pay directly. The health services delivery financed through off-budget is estimated to be as high as US\$ 2 per capita in Tanzania. Nonetheless, the assessment of off-budgeting spending on health services will be difficult to estimate. There is a need of bring the large share of health funding, which is off-budget, to the budget in order to ensure proper planning especially for human resource allocation given the scarcity of health personnel.
- Foreign financing is a significant amount of the health budget but it is declining overtime. The foreign financing of the health sector is more on development activities (to do with

malaria, HIV/AIDS and TB), which are current spending in nature. Despite the large share of development budget being foreign funded, it has declined over the last two years to below the 2005/06 level in real terms. This poses some serious challenge on the sustainability of funding malaria, HIV/AIDS, and TB health related activities in the near future.

Recommendations

These are drawn directly from the already identified challenges above and suggestions are based on the more pressing challenges. This should serve as the first cut suggestions which need to be considered in order to address financing challenges of health sector. The clear details of how suggested solutions should work can be developed later after discussion with key stakeholders in the sector – including MoHSW/ MoFEA, Development Partners, Private Provider, CSOs, FBOs, NGOs, Insurance Funds and health service beneficiaries. Some of key recommendations include:

- There is a need to protect budgetary allocations to the health sector and reverse as soon as possible the declining trend of resources channelled into the health sector. Currently resources allocated to health sector, for instance in the 2009/10 budget, fell short of requirement by HSSP III and further below the estimated requirement by WHO and Abuja Declaration on per capita terms
- There is need to make some more efforts in order to get a significant share of off-budget funding into the budget so that it becomes easy to account for the overall funding of the sector as well as monitor the progress achieved in health outcomes. This will also help to get optimal output from the health sector staff which is already overstretched.
- There is a need to address significant difference among districts in budgetary allocations, which is being driven by existing number of staff and facilities among districts. Specifically the government needs to find the way to attract staff to underserved districts. Perhaps sticking to the formula allocations of the health recurrent block grants among LGAs.
- The government needs to find a right balance in allocating resources among the three levels in the health sector – namely National, Regional, and LGA. Addressing most of the little health problems in rural areas will help to avoid overcrowding in regional and national hospitals but at the same time saving government resources.
- There is also need to address shortages in allocations for health sector infrastructure maintenance. Currently only less than 1 percent of the total health sector budget is being channelled to infrastructure maintenance. If this situation goes on unchanged will put to the sector in the risk of losing its existing infrastructure or incur very high cost in recovering it.
- User fee revenues shouldn't necessarily be considered in terms of their contribution to the overall sector resource envelope as this will remain small, but be viewed in terms of improving the availability of flexible funds at the facility or council level where they often represent the major source of discretionary funding for health facilities.
- Streamlining and improving the pre-paid and insurance schemes, i.e. CHF and NHIF, both to improve coverage and to reduce reliance on fees at the time of acquiring treatment.
- There is a need for regulation of the health insurance industry so as to be able to get a consistency between the different schemes i.e. NHIF, SHIB and many others.
- General view that the CHF is an appropriate financing mechanism particularly for poorer, more rural populations and so the fund should be expanded to the various rural areas around the country.

- Improved information and sensitization is required in order to ensure that the population is cognizant of the availability of free services for some groups and services while at the same time acknowledging the continuous challenges that the sector confronts in the areas of funding and human resources for health
- The government needs to improve availability of essential drugs in public health facilities, especially those which are located in remote rural areas. Lack of drugs turned out to be one of major reasons behind the big number of people in the rural areas who did not consult government service providers.
- The government needs to continue develop and increase capacity of medical personnel through training especially in rural located government health facilities which is hand-in-hand with attracting and retaining health staff in underserved remote areas. Thanks government has started addressing this problem through the government budget (starting from 2009/10) and the newly developed MTPP.

REFERENCES

- Mboera, L.E.G., Kilale, A.M., Manumbu, R.N., Kilima, S.P., Mwaseba, D.J.B., Range, N.S. & Edwin, T. (2009) *Evidence-Informed Policy Making and Priority Setting in the United Republic of Tanzania*. National Institute for Medical Research, Dar es Salaam, Tanzania.
- MoHSW (2009a) Ministry of Health and Social Welfare, Health Sector Performance Profile Report update, 2009.
- MoHSW (2009b) Ministry of Health and Social Welfare, Final draft PPP strategic plan, 2009.
- MoH (2005) Health financing workshop report, Tanzania. Ministry of Health, Dar es Salaam, Tanzania
- MoHSW (2007) Health Sector Annual Review Documentation [2007-2009]. Ministry of Health and Social Welfare, Dar es Salaam, Tanzania
- WB (2007) Health Sector Rapid Budget Analysis Background Notes (2007 -2009). World Bank
- URT Household Budget Survey 2001 & 2007. Ministry of Finance and Economic, Affairs, United Republic of Tanzania,
- Ministry of Finance and Economic Affairs (MoFEA), Budget Books (various)

CHAPTER 5: ISSUES BEHIND LITTLE PROGRESS IN SOME HEALTH INDICATORS IN TANZANIA: MATERNAL AND NEONATAL MORTALITY

Summary: Tanzania has made significant progress in some health indicators including reducing infant and child mortality as well as some progress in aspect of child malnutrition. Despite the improvement shown there is little progress in reducing neonatal and maternal mortality. Therefore, this chapter reports the analysis of factors contributing to little progress in reducing maternal and neonatal mortality for planning and implementing effective evidence based interventions in order to realize the Global Millennium Development Goals which have been translated in NSGPR. The information was obtained through desk review of available published and unpublished reports, Government Policies and guidelines as well as publications and technical reports obtained through internet search engines. Tanzania is among countries with highest maternal and neonatal mortality where are significantly more in rural than urban setting. Maternal mortality ratio ranges from 578 to 950 per 100,000 live births while neonatal mortality rate is estimated at 32 per 1,000 live births and accounts for nearly 50% of infant mortality rate in the country. Approximately 80% of maternal deaths in Tanzania are due to preventable causes. The major direct causes of maternal mortality include: obstetric haemorrhages, obstructed labour, pregnancy induced hypertension, sepsis and abortion complications. On the other hand, nearly 50% of newborn deaths occur in the first 24 hours of life while over 75% of them happen in the first week of life. Major causes of neonatal deaths in Tanzania include: infections such as sepsis, pneumonia, tetanus and diarrhoea. Other causes include complication of preterm birth and birth asphyxia. Indirect factors that could contribute to little progress in reduction of maternal and neonatal mortality in Tanzania is low coverage of Mother and Neonatal Care interventions and services due to inadequate resource allocation which has resulted to poor quality of service. About 62% pregnant women attend antenatal care visits four or more times as recommended. Furthermore, only 47% of all births in Tanzania occur at health facilities and 46% of all births are assisted by a skilled health worker. The other contributing factor is inadequate of provision of Emergency Obstetric care (EmOC) services in most health facilities. Currently only 64.5% of hospitals are providing comprehensive Emergency Obstetric care (EmOC) while only 5.5% of health centres are providing Basic EmOC and only 5 % of health facilities provide comprehensive post abortion care. It is estimated that 83% of women who deliver a live baby outside the health facility do not receive a postnatal check-up. Malaria is a significant cause of low birth weight and risk factor for newborn death and still birth but only 22% receive complete course of IPT (two dozed of SP) during ANC and 16%use ITN.HIV/AIDS pandemic in Tanzania accounts for little progress as by the end of 2008 only 55% of HIV positive women were receiving ARVs to prevent Mother to Child Transmission. .Very few women practice family planning, for example it is estimated that about 90% of married women are aware of contraceptives benefits, but only 26% of them use any method of contraception of which 20% use modern method. Maternal and neonatal deaths are unacceptably high in Tanzania which is contributed by low coverage and inadequate resource allocation for MNCH services, poor quality of service, limited access, insufficient community participation, and weak linkages between MNCH and related programmes and gender inequalities. In order to considerably reduce maternal and newborn deaths, the following strategies are recommended: Strengthening the health system and increasing coverage of maternal, newborn, and child health interventions such as skilled attendance during childbirth, emergency obstetric and neonatal care and family planning services. Improving social and economic status of women by providing education and economic empowerment. Community involvement, empowerment and encourage early booking for antenatal care, early recognition of signs of complications and health facility delivery. Mobilizing political commitment and fostering an enabling policy environment

BACKGROUND

Although nature has entrusted women with the function of human survival through childbirth, most often this function is performed with potential health risks to the women. It is estimated that, globally more than 500,000 women die from pregnancy and childbirth related conditions, likewise 4.4 million newborns die per year. Most of these deaths occur in Sub Saharan Africa.

Tanzania is one of the ten countries contributing to 61% and 66% of the global total maternal and newborn deaths, respectively (MoHSW 2008). Improving maternal, newborn and child health is an important priority area in the National Strategy for Growth and Poverty Reduction (NSGPR known as MKUKUTA in Swahili) 2005-2010 as reflected in the second cluster of the strategy.

There are four operational targets related to maternal and child health for monitoring progress towards achieving MDGs 4 and 5 which include reducing infant mortality from 95 in 2002 to 50 in 2010 per 1,000 live births, child (under five) mortality from 154 to 79 in 2010 per 1000 live birth, maternal mortality from 529 to 265 in 2010 per 100,000 and increased coverage of births attended by trained personnel from 50% to 80% by 2010(NSGPR, 2005). In order to achieve the Millennium Development Goals on maternal and neonatal mortality an annual drop of 5.5% is required. Several interventions and strategies have been employed for reducing maternal mortality ratio (MMR) and neonatal mortality rate (NMR). In spite of a number of efforts, these health indicators have persistently remained high. The current MMR and NMR are very far behind the NSGPR health targets hence it is very important to explore the issues behind slow progress to reduction of these health indicators in order to guide action for maternal and newborn health.

Maternal health services are the health services that are provided for women during pregnancy, delivery and in the postpartum period. Immediate and effective professional care during pregnancy, labour, and delivery and after childbirth can make the difference between life and death for both the women and their newborns, as complications are largely unpredictable.

Despite a number of global and national efforts to improve women's health, death of women during child birth remains an unresolved challenge in Tanzania. The direct causes and problems associated with maternal death have already been identified and solutions have been proposed. However, the main issue is how to apply the solutions taking into account the socio-cultural, political and economic realities and inherent constraints. The majority of women in Tanzania still deliver at home with the support from non skilled attendant, but even with those who deliver in the health care facilities, the quality of care is questionable. Scaling up of effective initiatives aimed at reducing maternal death is the key to achieving Millennium Development Goals (MDGs). However, insufficient resources, and other associated socio-economic and cultural factors preventing an effective scale-up of the interventions are major causes for concern.

The persistently high maternal and neonatal mortality in Tanzania has been noted with great concern (National Bureau of Statistics 2005). While Tanzania has registered some gain during the last decade with regards to infant and underfive mortality, the maternal and neonatal mortality rates have remained static. Access to high quality family planning, quality antenatal care, skilled attendance at birth and early access to quality emergence obstetric care when a complication occurs are strategies recommended to reduce high maternal mortality rates . Evaluation of different intervention strategies to reduce maternal mortality used in different parts of the world is essential to arrive at local optimal interventions for Tanzania. The anticipated impacts of effective interventions to prevent maternal deaths include development of realistic case management guidelines and protocols as well as improving case managements and referral health system.

The presence of such high maternal mortality despite the national commitment to reduce maternal and newborn deaths suggest deficiencies in the health system and its linkage to the communities. Some of the weaknesses may include skills of the health providers as well as inadequacy in enforcement of management guidelines and protocols in the provision of care and

thus impacting on the quality of care. The intervention program in Kigoma region which had 22 items whose main focus was on staff supervision, audit and equipment maintenance resulted into remarkable improvement in obstetric outcome that reduced maternal and perinatal mortalities and morbidities overtime (Mbaruku 1995).

A desk review of available reports, Government Policies and guidelines as well as publications and technical reports obtained through internet search engines was conducted to analyze and synthesize issues behind little progress in reducing maternal and neonatal mortality. The analysis covers status of target indicators related to maternal and neonatal health, on going efforts and challenges for improving maternal and neonatal health and set of recommendations for action.

The objective of this section is to synthesize the issue behind little progress in reducing maternal and neonatal mortality. This section will cover health indicators related to maternal and neonatal health, current status of these indicators, current strategies for improving maternal and neonatal health, constraints/challenges towards achieving the goals and recommended way forward.

Desk review of government policies, guidelines, publications and technical reports obtained through internet search engines was conducted to synthesize factors contributing to a little progress in reducing maternal and neonatal mortality.

SITUATION OF MATERNAL MORTALITY IN TANZANIA

In spite of increased international and national efforts, Tanzania has maternal mortality ratio (MMR) estimates of 578 per 100,000 live births (TDHS 2004/2005). This translates to about 13,000 women dying annually due to pregnancy related causes in Tanzania. Around 80% of maternal deaths are due to preventable causes. The major direct causes of maternal mortality are Obstetric haemorrhages (ante-partum and post-partum), obstructed labour, pregnancy induced hypertension, sepsis and abortion complications. Factors underlying direct causes of maternal deaths include poor access to and use of emergency obstetric services, poor quality of care, shortage of qualified staff, low staff morale, lack of quality control and household socio-economic factors.

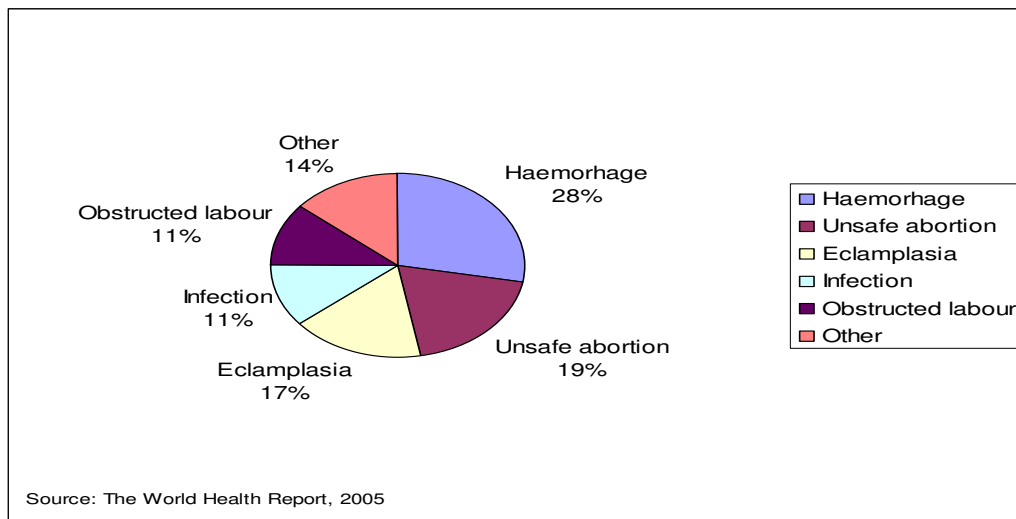


Figure 5.1: Causes of Maternal mortality Death

Delay in access to maternal health care also underlay maternal death. Delay in accessing care occurs at three levels: First level of delay in decision making to seek medical care due to women low decision power to seek medical care. Most often it is the mother of the pregnant woman or

husband who decide where and when to seek care, hence if they are not available a considerable time is lost to obtain health care. Delay at home is one of the important factors contributing to maternal death at level one. Level one delay is also contributed by lack of awareness of the magnitude of life threatening conditions and inadequate first choice of care. Second level delay is due to lack of transport from home to a health facility and for referral from lower health facility level to a referral facility. Transport problems are contributed by shortage of means of transport and poor road infrastructures particularly in rural areas, more especially during rainy season. Most rural communities had no enough money to manage to hire a reliable means of transport and health facilities had no ambulance to assist in transport. Third level delay is attributed to suboptimal care due to lack of human resource and equipment, wrong diagnosis and poor quality of care and lack of emergency obstetric care (Urassa et al, 1997).

SITUATION OF NEONATAL MORTALITY IN TANZANIA

Although Tanzania has made a good progress in reducing the under fives mortality, the neonatal mortality rate remains high at 32 per 1,000 live births and accounts for 47% of the infant mortality rate. Each year, nearly 51,000 newborns die in Tanzania, which places it among the top five countries with the highest rate in newborn deaths in sub-Saharan Africa. Tanzania's newborn deaths represent 29% of all child deaths in the country (WHO 2006). Nearly 50% of newborn deaths occur in the first 24 hours of life while over 75% of them happen in the first week of life (Manji, 2009).

Three main causes of neonatal deaths in Tanzania are infections including sepsis, pneumonia, tetanus and diarrhoea diseases (Figure 1). Other causes include complication of preterm birth and births asphyxia ((Manji, 2009)). Eighty-six percent of neonatal deaths in Tanzania are also associated with low birth weight (LBW), many of whom are preterm (MoHSW 2008c). In average in Tanzania newborn mortality rate is 67%, higher in poorest families compared to the riches ((Manji, 2009).

Neonatal deaths and stillbirths stem from poor maternal health, inadequate care during pregnancy, inappropriate management of complications during pregnancy and delivery, poor hygiene during delivery and the first critical hours after birth, and lack of newborn care. Several factors such as women's status in society, their nutritional status at the time of conception, early childbearing, too many closely spaced pregnancies and harmful practices, such as inadequate cord care, letting the baby stay wet and cold, discarding colostrums and feeding other food, are deeply rooted in the cultural fabric of societies and interact in ways that are not always clearly understood (WHO 2006a).

High rates of neonatal deaths are common even with tertiary level hospitals. For instance, in a study conducted at the Muhimbili National Hospital, there were 7497 stillbirths (SB) and 2135 early neonatal deaths (END) making a total of 9632 perinatal deaths among 77,815 babies delivered during a 5-year period (1999-2003). Thus SB, END and perinatal mortality rates (PMR) were 96, 27 and 124 respectively (Kidanto et al., 2006). A large proportion of the intrauterine deaths occurred during labour after arrival to the labour ward. The majority of the neonatal deaths were asphyxiated at delivery. There was a significant decrease in the LBW rate during the study period from 19.0% in 1999 to 16.5% in 2003, but that was not followed by a similar trend in PMR. The PMR for multiples and singletons were 269 and 118 respectively resulting in a rate ratio of 2.3. The corresponding figures for labour related deaths were 105 and 35.7 respectively resulting in a rate ratio of 2.9. The (PMR) was 913/1000 for singleton births and 723/1000 for multiple births for babies weighing less than 1500 grams and 65/1000 for singleton births and 116/1000 for multiple births for babies weighing 2500 grams or more. About

41% of all perinatal deaths weighed 2500 grams or more with almost equal numbers of pre-labour and labour-related intrauterine deaths. The majority (1611/2135) of the neonatal deaths had Apgar score <7 at 5 minutes. Among the multiple births there were 60 labour-related deaths in babies weighing >2500 grams. The major causes of neonatal mortality were birth asphyxia (37%), preterm deliveries (29%), sepsis (16%) and respiratory distress syndrome (6.4%).

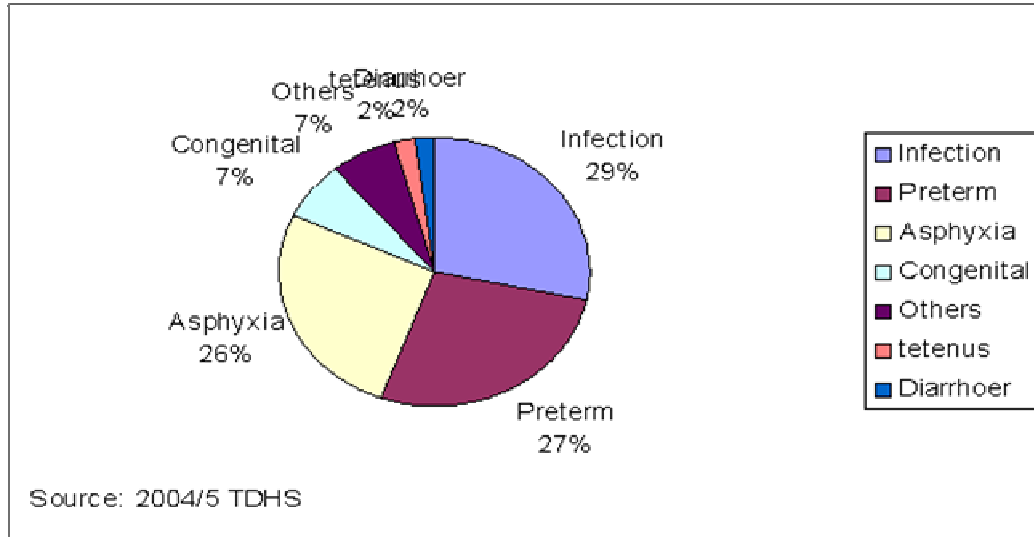


Figure 5.2: Causes of neonatal deaths in Tanzania (TDHS, 2005)

Current strategies and initiatives for improving status of maternal and newborn health

Persistent high maternal and neonatal mortality is one of public health issues addressed by various global and national commitments, as revealed in the targets of National Vision 2025 the Millennium Development Goals (MDGs), the National Strategy for Growth and Reduction of Poverty (NSGRP), and the Primary Health Services Development Program (PHSDP-MMAM) (10). During the past 5 years efforts and strategies used to address the maternal, newborn and child health challenges include the National Health Policy (revised in 2007), the Health Sector Reforms and the Health Sector Strategic Plan (2003-2007). Furthermore, the Reproductive and Child Health Strategy (2005-2010) and the National Road Map Strategic Plan to Accelerate the Reduction of Maternal and Newborn Mortality (2006-2010) were also formulated to respond to these challenges (MoHSW, 2008c). The Health Sector Support Programme III (2008 – 2012) will incorporate and address maternal, child and neonatal health (MCNH) issues in terms of alignment with Government policies, resource mobilization and donor harmonization. The newly initiated Primary Health Service Development Programme, (PHSDP/MMAM) 2007–2017, addresses the delivery of health services to ensure fair, equitable and quality services to the community and is envisioned to be the springboard for achieving good health for Tanzanians. The Tanzania MNCH Partnership was officially launched in April 2007 to re-focus the strategies for reducing the persistently high maternal, newborn and child mortality rates, through adopting the One Plan and setting clear targets for improved MNCH (MoHSW, 2008c). The Human Resources for Health plan targets at solving the human resources crisis in the sector (MoHSW, 2008b).

Maternal, newborn and child health care is one of the key components of the National Package of Essential Reproductive and Child Health Interventions (NPERCHI) focusing on improving the quality of life for women, adolescents and children. The major components of the package include: antenatal care; care during childbirth; care of obstetric emergencies; newborn care; postpartum care; post abortion care; family planning; diagnosis and management of HIV/AIDS including prevention of mother to child transmission (PMTCT), other sexually transmitted

infections and reproductive tract infections (STI/RTI). Also prevention and management of infertility, cancer, childhood illnesses, immunisable diseases and nutrition care (MoHSW, 2008b).

Currently Reproductive and Child health (RCH) care services in Tanzania are available at community and various levels of health system from dispensaries, health centres and hospitals and through outreach services.

Table 5.1: Maternal and neonatal health indicator targets of various national commitments and current status

Indicators	NSGPR Target	MMAM Target	National Roadmap	Current status
Maternal Mortality Ratio (MMR)	From 529 to 265 in 2010	From 578 to 220 by 2012	From 578 to 193 by 2015	578(TDHS 2004/5) 950 (WHO 2005)
Neonatal Mortality Rate (NMR)			From 32 to 19 by 2015	32 (TDHS 2004/5)
Births attended by trained personnel	From 50% to 80% in 2010	46% in 2004 to 80% by 2012	From 46% to 80% by 2015	46% (TDHS 2004/5)
ANC attendance at least 4 visits			From 64% to 90% by 2015	
Modern contraceptive prevalence rate			From 20% to 60% by 2015	20%(TDHS 2004/5)
% health facilities offering Essential Newborn Care			To 75% by 2015	
Hospital Coverage of CEmOC			64% to 100%	
health centres and dispensaries BEmOC coverage			From 5% to 70%	

Coverage of Maternal and Child (including neonatal) health services

Tanzania has a good coverage of health facilities with over 90 % of the total population living within 5 kilometres from a health facility (MoHSW, 2007). However not all components of health services are available and accessible especially in remote areas.

Antenatal care (ANC) is one of the components of the National Package of Essential Reproductive and Child Health Interventions which is important to pregnant women, families and providers in early recognition of danger signs and complications and planning for birth with a skilled attendant. Also ANC enhance pregnant women to recognize and seek care for maternal and new born emergencies. Available statistics indicate that 94% of pregnant women attend antenatal care at least once. However there is a decrease to 62% in the number of women who make four or more ANC visits as recommended. Despite high ANC attendance, only 14% of pregnant women start ANC during the first trimester as per the national guidelines. On average most women pay their first ANC visit at 5.4 month of pregnancy. One third of women do not seek ANC until their sixth month or later (TDHS, 2004/05). Early booking has an advantage for proper pregnancy information sharing and pregnancy monitoring (MoHSW, 2008c). Despite a high coverage of ANC services in the country, the quality of antenatal care provided is inadequate. Available statistics indicate that about 40% to 65% of women attending ANC, have their blood pressure measured, blood sample taken for haemoglobin estimation, undergo syphilis screening, urine analysis and informed of the danger signs in pregnancy and childbirth.

Furthermore a survey conducted in six districts in Tanzania showed that only 15% of women attending ANC had physical examination, only 22% received counselling and testing for HIV. Family planning information is provided to 21% of pregnant women; with only 3% receiving advice about nutrition and diet, only 1% on pregnancy and delivery while 36% of pregnant women received anthelmintics for deworming (Manji 2009).

Malaria is estimated to cause up to 15 % of maternal anaemia, which is more frequent and severe in first pregnancies. Malaria is a significant cause of low birth weight which is the most important risk factor for newborn death and is also a risk factor for stillbirth. Efforts to combat malaria among pregnant mothers are being scaled up. Pregnant women are supposed to receive two doses of SP for intermittent preventive treatment (IPT) of malaria during routine antenatal care visits. However, according to TDHS (2004/05), only 22% of pregnant women attending the ANC clinic receive the complete course of IPT, and only 16% use Insecticide Treated Nets (ITNs). Recent data from the National Malaria Control Programme (NMCP) indicate that the proportion of pregnant women sleeping under ITNs has increased to 28% (9; Chapter 1). In addition, 62% of the pregnant women attending ANC clinic receive folate and iron supplementation while 80% are immunized for Tetanus at least once and 56 % receive two or more injections.

Intra-partum care

Despite a high ANC attendance, only 47% of all births in Tanzania occur at health facilities and 46% of all births are assisted by a skilled health worker. Out of the 53% of births which take place at home, 31% are assisted by relatives, 19% by traditional birth attendants (TBAs) and 3% are conducted without assistance. There is also inequity in access to skilled birth attendance, births to women in the highest wealth quintile are more likely to be assisted by a skilled birth attendant (87%) than women in the lowest quintile (31%) (MoHSW, 2008c).

Factors leading to low ANC attendance include low quality and unfriendly services, lack of money for transport, sudden onset of labour as a result of inaccurate calculation of expected date of delivery and lack of privacy.

Currently only 64.5% of hospitals are providing comprehensive Emergency Obstetric care (EmOC) while only 5.5% of health centres are providing Basic EmOC and only 5 % of health facilities provide comprehensive post abortion care. Proper management intervention during delivery is imperative in preventing stillbirths and early neonatal deaths. Some hospital surveys revealed that monitoring and recording of vital signs were often not done and most of the time partographs were not used properly and also clean delivery practices were not followed (Manji 2008, Muhondwa 2005).

Most of the health care facilities lack space for maternal and child health services. For instance, around 70% of the dispensaries and 40% of health centres lack this compulsory component (MoHSW, 2008c). Lack of adequate facilities together with lack of decision making power in reproductive health among poor women contribute to high levels of home-based deliveries.

Postnatal care

It is estimated that 83% of women who deliver a live baby outside the health facility do not receive a postnatal check-up (MoHSW, 2008c); interestingly most of those who deliver at health facilities do not return back to health facilities for check up. One survey involving women with infants aged less than six months revealed that only 5.7% of mothers return back for check up within one week after delivery and majority are those who have undergone caesarean section. About 23% would return in 2-3 weeks and 71% only when they come for immunization of their

infants (Manji 2008). Early post-natal care is a critical opportunity to provide basic services for birth mother and more than 75% in the first week. The limitation on postnatal care in one way is contributed by the lack of guideline which is a driving gear towards provision of health services to the required standard (Manji 2008).

Post abortion care

In Tanzania unsafe abortion account for 19% of maternal death compared to 13% globally and 30 to 50% in Sub-Saharan Africa (<http://www.ncbi.nlm.nih.gov/bookshelf/>). In Tanzania abortion is illegal therefore victims of unwanted pregnancy particularly teenagers resort to street abortionists or quacks. Crude methods used in the pregnancy termination, delay in seeking medical attention when and if there is a problem, and the poor quality of post-abortion care lead to a significant proportion of the victims sustaining serious injuries with life-threatening complications, resulting in either death or disability (<http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=dmsa&part=A1437>). Post abortion care can significantly reduce maternal mortality due to unsafe abortions. However, only 5% of health facilities in Tanzania currently provide this service.

Prevention of Mother-to- Child Transmission of HIV

By September 2007, there were about 1,311 PMTCT sites established within reproductive and child health (RCH) clinics throughout the country. PMTCT services are available in 91% hospitals, 88% health centres and 60% of dispensaries. About 34% of HIV positive women were receiving ARVs to prevent MTCT in 2007 (NACP, 2007). The proportion has increased to 55% by the end of 2008. If the same pace is maintained the target of 80% by 2012 is likely to be reached. The crucial time for prevention of mother-to-child transmission of HIV and initiation of breast feeding is during delivery service. However, since only about half of deliveries are taking place in the health facility is difficult to ensure PMTCT services are effectively implemented (WHO, 2006a, MoHSW, 2008c).

Family planning

One of the major factors contributing to the challenge of attaining MDG goals related to maternal and neonatal health is the continued growth of the population. Spacing the intervals between pregnancies can prevent 20 to 35% of all maternal deaths. Although about 90% of married women have high knowledge of contraceptives, only 26% of them use any method of contraception of which only 20% use modern method. Current usage of any modern method is higher among sexually active unmarried women (41%) than among married women (26%).

Maternal nutrition

Maternal nutrition during pre-and postnatal period is very important for the pregnancy outcome as well as infant feeding. Underweight status contributes to poor maternal health and birth outcomes. Overall, 10% of Tanzanian women of reproductive age (15–49 years) are considered to be undernourished, having a Body Mass Index (BMI) of less than 18.5. Pregnant women are particularly vulnerable to anaemia due to increased requirements for iron and folic acid. According to TDHS (2004/05), 48% of women aged 15-49 years were found to be anaemic, whereas 58% of pregnant women and 48% of breast-feeding mothers were anaemic. By 2005, only 10% of pregnant women in Tanzania were taking iron tablets for at least 90 days, while about half (52%) for less than 60 days, and 38% were not taking iron tablets at all. Haemorrhage is the most frequent cause of maternal deaths, and pregnant women who are anaemic are more vulnerable to postpartum haemorrhage.

Integrated Management of Childhood Illness

Case management of common childhood illness is a key step to reducing child mortality. The updated IMCI clinical guidelines have included the newborn and HIV/AIDS to improve neonatal health.

CHALLENGES IN REDUCTION OF MATERNAL AND NEONATAL DEATHS

Data from TDHS (2004/05) revealed that the major barriers perceived by women in accessing delivery health services include lack of money (40%), long distance to health facility (38%), lack of transport (37%), and unfriendly services (14%). The high rate of home deliveries is also attributable to a malfunctioning referral system, inadequate capacity of health facilities in terms of available space, skilled attendants, medical equipments and supplies, and other socio-cultural aspects affecting the pregnant women. Additional factors include gender inequalities in decision-making and access to resources at household-level (MoHSW, 2008c). The critical challenges in reducing maternal, newborn as well as child morbidity and mortality can therefore, be categorized into two factors, namely, health system and non-health system factors.

Health system factors

The health system in Tanzania is weak hence cannot adequately respond to the health needs of its people in particular that of mothers and newborns.

Inadequate and shortage of Human resource for health

The health system is characterized by inadequate numbers of skilled health workers and those available are poorly distributed in such a way medical attendants, who are marginally skilled, are in most cases substituting for professional nurses. There is an acute shortage of staff such that only 35% of the required personnel are in place to provide health services (MoHSW 2008). Some areas of the country particularly Kagera, Shinyanga, Tabora and Kigoma have a shortage of more than double the number of health worker per 10,000 population compared to others (President PO-PSM, 2008). The situation is even worse particularly for the lower-level health facilities, where dispensaries and health centres have shortages of 65.6% and 71.6%, respectively. This has a major impact on maternal, newborn and childcare. Most significantly recognizable is the lack of skilled attendants during childbirth to provide Emergency Obstetric Care. The shortage of human resource for health is associated with poor skills mix; non-attractive incentive and salary packages; poor motivation; inadequate performance assessment; rewarding systems; poor retention of staff especially in remote and hard to reach areas (MoHSW 2008c) and lack of appropriate supportive supervision.

Shortage of Equipment, Pharmaceuticals and Medical Supplies

Health facilities at all levels have inadequate space and equipment. Dispensaries don't have adequate space for MCH activities, health centres and some hospitals don't have theatres. The shortage of essential equipment and trained staff is a likely contributor to low coverage of focused ANC interventions. See detailed information in chapter 2.

Weak Referral system

Referral system in Tanzania is not functioning well due to various reasons such as, serious shortage of health workers and expertise at all levels of health facilities, shortage of essential drugs, lack of diagnostic services, and lack of transportation and communication facilities. There are no referral guidelines and therefore patients at their own discretion can enter at a higher level of care than necessary. Regional hospitals are operating as district hospitals instead of performing their role as further specialised referral hospitals in support of district hospitals (MoHSW, 2008a). People go to the nearest HF for all their health needs, regardless of

the level of the HF, saving time and transport costs. The fact that the referral system is not working leads to cost increases, largely because many people are treated at a higher, more costly, level than necessary. It also leads to overcrowding of the higher levels hence affecting the quality of care as well as denying the opportunity for other patients who need the service the most.

Health policy

Tanzania has enough and well written national policy documents targeting improvement of reproductive and child health services including maternal and newborn health. The key gap is between policy and action.

Quality of care

The quality of maternal health services amongst other factors is partly responsible for ensuring a healthy mother and baby at the end of pregnancy, delivery, and in the post partum period. Quality of health services provision in most of health facilities is poor due to many factors such as inadequate capacity at health facilities in terms of space, skilled attendants, equipment as well as lack of functioning referral system. These factors leads to unfriendly services; lack of privacy in wards, consultation and counselling rooms together with overcrowding in diagnostic and wards as well as long waiting queues in diagnostic facilities.

Financing

Inadequate financing and sustainability of the health sector in general and of reproductive health in particular are important factors affecting progress in improving maternal and neonatal health. During FY 2005/06, the health budget allocation was Tsh.453.2 billion, which is 10.1% of the total Government budget, below the recommended Abuja target of 15%. (MoHSW, 2008c)

Inadequate funds limit investment for training of health personnel as large portion of the health sector budget depends on donor funds support. This increases the challenge of births attended by skilled health providers. The Government of Tanzania has introduced a fee exemption policy for delivery care aimed at reducing financial barriers to using maternal services. This policy also aimed to increase the rate of skilled attendance at delivery, reduce maternal and perinatal mortality rates and contribute to reducing poverty. However, there are contradictory reports of the interpretation of the policy and its usefulness, especially in rural setting of the country.

Communication and Transport

Communication between a peripheral HF and district hospital is essential for patient care, referrals and administration. Moreover, facility personnel feel less isolated if they can regularly communicate with the council headquarters. There are still many remote health facilities without any form of communication or where equipment installed some years ago is not working due to lack of maintenance. In the case of an emergency, staff can sometimes use their private mobile telephones, but these costs are not reimbursable.

Transportation is directly correlated to access to health care services. If patients cannot reach a health facility, especially in emergency cases or for deliveries, they simply receive no care. Many of the remote rural areas have almost no public transportation, meaning that patients still need to travel long distances on foot or bicycle before they reach a health facility and while during the rainy season many roads are impassable. Even in urban areas, when patients need to take a taxi, the costs can be a many times higher than the costs of the medical services and become prohibitively expensive.

Although some districts have ambulance services for emergency cases but its use differs greatly from one district to the other. In some districts the use of an ambulance is free for certain groups,

such as pregnant women and under-fives, while others clients have to contribute the fuel cost (COWI et al 2007).

Quality of data

Tanzania like many developing countries face inadequate resources to keep track of neonatal deaths; therefore data for these areas are estimates only. Another methodological problem in measuring infant mortality is ascertaining the number of live births. Sometimes this problem is one of undercounts of births (i.e., births are not registered and thus not counted); sometimes the difficulty lies in inconsistently differentiating stillbirths and live births, especially across countries because this distinction is not as clear-cut as one might imagine. If newborn deaths are significantly underestimated, assessment of progress may be difficult (COWI et al 2007). Measuring maternal mortality remains of the more difficult issues in maternal health, and yet an accurate picture of the scope of the problem is important to implement approaches to improve maternal health.

The registration of vital events (births, deaths) does not have a good coverage, while this information is required for planning health services and to determine Tanzania progress towards achieving its Millennium Development Goal (MDG), by 2015. Moreover, despite usefulness of vital registration, this is under the Ministry of Justice and Constitutional Affairs. The district registrations are required to register births and deaths occurring in their respective areas and submit returns to the Registrar General who is the custodian of the registration data. Despite the fact that registration is compulsory and it is supposed to covers most part of the country, it is unfortunately that the data from this system is still incomplete.

Health Information and Management system

The quality of data, frequency of data collection and the use of data for decision making are crucial. There are weaknesses in routine data collection in the health system. Most of the data from health facilities are neither timely, complete nor reliable. Often data collection is delayed and feedback system to the collecting health facilities is non existence. FBOs in general comply with national information systems, but private-for-profit facilities often do not provide any information hence their data can not be captured (MoHSW, 2008b, 2008c) Disease surveillance is improving steadily, but still meeting reporting delays (MoHSW, 2008b) . Besides that even the routine data collection is missing process indicators for maternal health and EmOc only have impact indicators which cannot monitor the progress within specified short period (MoHSW, 2008c).

More problematic is that data are not analysed, organised or presented in a user-friendly way. Interpretation is difficult and therefore there is limited use of data for local planning, at all levels of the health delivery system as a result, resources are not always allocated to where they would be needed most (MoHSW, 2008b). Human resources are inadequately skilled in all steps of the information cycle (data collection, processing, analysis, epidemiology, research etc.) and MOHSW has problems keeping skilled ICT staffs who are attracted to the “greener pastures” in the private sector. Because the Health Management Information System (HMIS) is facility-based routine service statistics it cannot provide population statistics, needed for monitoring and evaluation of NSGPR and MDGs targets (COWI et al 2007).

Weak health management and planning at all levels

At community level where the health services beneficiaries live, the village health committee is an important structure to speak on behalf of the communities’ health concerns to the district management. But the village health committees are not legally recognized hence are not well capacitated (MoHSW, 2008c), therefore cannot play important role to address the community

health concerns neither giving feedback of health services received for important decision making regarding issues of maternal and newborns to the district plans.

Almost all reproductive and child health services are coordinated by the RCH coordinator who is in charge of the RCH unit. Since planning starts at the district and is managed by the CHMT, all key health services player's needs to be involved from planning, monitoring and evaluation of health service within the district. But in some districts RCH coordinators are not members of CHMT, hence the problem of RCH services provision might not get full representation during management decision making including the district health plan. Most of the planning and health services are done by the CHMT with little involvement of the personnel at the lower levels (MoHSW, 2008c).

Inadequate coordination between public and private facilities

There is a weak coordination between private health facilities and public facilities, especially as regards to reporting of routine facility based data. The district health management team can only do routine supervision to monitor health services provision as well giving updates of all necessary changes regarding provision of health services such as new guidelines and routine data collection issues only to government health facilities. Routine data are important feedback towards measuring the achievements of the NSGPR targets therefore missing of important data can lead to miss informed decisions.

Inadequate documentation and sharing of Best practices

Best practice proven to be successful need to be document and shared across health providers in the country for improving service delivery and informing the policy makers. It is important to have a mechanism of collecting and sharing programs evaluation reports across the country especially those which have proven successfully for learning and scaling up all the best practices for improving service provision in the country.

Non- Health system factors

Provision and access of health services depends on number of factors within the health system and outside the system. Social-economic factors, traditional practices, norms and values can affect the uptake of health services.

Gender inequality

Pregnancy outcome and maternal survival have strong correlations with household behaviour and decision making. Low recognition of women in the household and society as a whole, as exemplified by inequality in education, employment, property ownership, participation, and decision making, is another important correlate. Gender-based violence is common in situations in which the status of women is low and legal protection inadequate, and in turn it is correlated with high rates of maternal mortality (MoHSW, 2008c). Early marriage and childbearing are associated with high parity and therefore higher risk of maternal death
(<http://www.ncbi.nlm.nih.gov//bookshelf/br.fcgi?book=dmsa&part=A1437>)

Social cultural beliefs and practices

Harmful traditional practices and religious beliefs also adversely affect maternal health. In addition, a plethora of harmful beliefs and practices around pregnancy and childbirth affect health-seeking behaviour during pregnancy and parturition. The disproportionately low use of health facilities for delivery care is testimony to the strength of these beliefs (<http://www.ncbi.nlm.nih.gov//bookshelf/br.fcgi?book=dmsa&part=A1437>).

Inadequate community involvement

Inadequate community involvement and participation in planning, implementation, monitoring and evaluation of health services as well as weak educational sector contribute to poor maternal and neonatal health (MoHSW, 2008c). Community and household level interventions have highest impact, but are given lowest priority. Intervention delivered at community and household levels were found to have highest level impact. Unfortunately, most health systems are set up in such a way that allocation of human, material and financial resource favours facilities-based curative care. Where community-based programmes have been set up, they tend to operate on small scale, with little support from the formal system (UN, 2006).

The communities are not well informed on health issues especially on maternal and child care issues. There is inadequate health education outreach services due to poor planning and inadequate resources, hence even the village and health facilities committees are not well informed and empowered to address issues of maternal and child health.

Inequalities in services delivery

Despite the good network of primary health facilities, accessibility to health care is still inadequate due to many reasons. In some areas the accessibility to health facilities is more than 10km and where accessibility is less than 5km to health facilities the availability of health care is inequitable, with human resource operating at 35% of the required skilled workforce. The shortage of staff housing at or close to health facilities is a major contributing factor which hampers recruitment and retention of qualified health workers in the rural areas. It is assumed that 30% of the health centres lack adequate and suitable staff houses and 60% of the existing staff houses are in bad state of repair. Availability of other social services for the family, such as schools, banks and markets for essential supplies is important for attracting and retaining workers at particular area.

Minimum Operational research

Operational research are important to provide quick information and practical suggestions for answering immediate concerns and addressing important challenges of the health system for decision making. Operational research is under-funded, while the census has gaps in terms of detailed information which can address the challenges to maternal and neonatal death. Most of research findings often are shared in international journals and are not well re-packaged and translated for policy and decision makers.

CONCLUSIONS AND RECOMMENDATIONS

Maternal and neonatal deaths are unacceptably high in Tanzania which are contributed by low coverage and inadequate resource allocation for MNCH services, poor quality of service, limited access, insufficient community participation, and weak linkages between MNCH and related programmes and gender inequalities.

The principal problem in achieving health targets is inadequate coverage of the health system to deal with the health service needs of rapid increasing population in the country which was not considered during the development of NSGPR. Despite of a good coverage of health facilities there is an uneven distribution of health services to different communities. Most of available health facilities do not provide all necessary services due to shortage of skilled workers, equipment and diagnostic services. In order to achieve the Millennium Development Goals as well as NSGPR targets on reducing child and maternal mortality the following are recommended:

Recommended solutions for health system factors

Strengthening Health System

Many studies on antenatal care have focused less on the quality and little information is provided on the arrangement in terms of care organization, provision and utilization especially in Tanzania. The availability and quality of skilled care of pregnancy, at birth and immediately after birth is a major determinant of the immediate survival and health of both mothers and babies.

The content of antenatal care is important in judging the quality of the service. It has been documented that both maternal and neonatal mortality are lower in countries where pregnant women get skilled professional care, with equipment, drugs and other supplies needed for the effective and timely management of complications. Studies have shown that adequate financing is a major factor in achieving provision of quality care in maternal health services (REF). In view of the above findings it is important that adequate resources are made available to provide services, and hence improve maternal and neonatal health in the country.

Improving Human Resource for Health

Increase the number of skilled birth attendants by upgrading and establishing more training institutions as well as providing opportunities for on job skills development. Also build the capacity and upgrade allied health workers to meet the needs of the expanded primary health facilities. Strategies should be put in place to attract, motivate and retain skilled health workers through provision of housing, hardship allowances, and other incentives which are important.

For improving the quality of the quality of human resource, pre-service and in-service training through continuing professional development and supervision/coaching of health workers, combined with performance based management should be given a priority. Focus should also be on maintaining health worker discipline and ethical standards (4). Training /retraining alone is not enough, but should be go along with review of regulations, guidelines, standards and standardised supervision, at all levels of the health services to ensure delivery of quality health services.

Increasing access to primary health care in remote areas will provide MNCH closer to the community but this does not mean hence increased skilled attended deliveries. The focus should be to increase proportion of skilled attended deliveries, providing Emergency Obstetric care and Family Planning. To meet the big demand of skilled attended deliveries a comprehensive human resource plan must focus not only on training but also retaining and sustaining existing staff. Most important is improving the workforce in health facilities, not only in numbers but also in competencies to provide quality MNCH care.

Increasing family planning and contraceptives coverage

Increasing access to and use of family planning in order to reduce the number of unplanned and unwanted pregnancies and ultimately reducing the lifetime exposure to the risk of maternal mortality. This should be accompanied by strategies for community education such as outreach services, for improving community knowledge for change of attitude and practices. It is equally important to put in place a mechanism to ensure there is male and youth friendly facilities which will accommodate issues of reproductive health.

Equipment, Pharmaceuticals and Medical Supplies

Provision of essential equipment, pharmaceuticals and supplies for maternal and newborn health care to all health facilities to ensure best possible performance. Renovation and construction of operating theatres, labour wards, and RCH units. Adequate budget should be set aside for the purchase of equipment and medical supplies.

Strengthening the Referral system

To strengthen the referral system and where necessary to establish teams of consultants to conduct mobile clinics and outreach to support provision of health services close to the community and minimize unnecessary referrals. Equipping Health centres and District hospitals with required mix of staff, equipment and medical supplies so that the Regional hospital can be used to attend referral cases and emergencies only. The referral system should respond to obstetric and newborn emergencies and not normal delivery as it used to be. The system needs to be supported by provision of equipment and supplies and good communication and transport systems.

Upgrading Health infrastructures

Infrastructure upgrading in terms of rehabilitation of existing facilities and expansion of health facilities requires a lot of resource. Resource mobilization from different stakeholders like faith-based organizations and development partners, individuals like business persons and local fund raising can support can contribute a lot to infrastructure upgrading.

Reinforcement of policies for the benefit of the poor

Tanzania has enough policies; the key gap is between policy and action, and especially in reaching the poorest and most vulnerable women and babies who are most at risk. It is critical to ensure Government adopts policies to reach poor and marginalized communities.

Increasing number of ambulances to the district hospitals

Most of ambulances are either donated by a development partner or government support, which do not cover running and maintenance costs. The critical issues with the availability of the ambulance are coverage of maintenance costs and proper use. District councils should develop a clear policy on ambulance use to ensure its availability for patients when needs arises, develop a sustainable mechanism for maintenance and a plan for attending emergence cases for patients who cannot contribute for the transport.

Data Quality and Monitoring and Evaluation

Routine data collection, M&E needs to be strengthened in order to achieve evidence-based planning, and to establish transparent accountability. Existing tools should be reviewed to include process indicator for capturing information on issues related to Neonatal and EmOc . Health workers should be given appropriate training on data collection and use with regular supportive supervision linked to information use. HIMS focal person from the district to region level should be well equipped with ICT tools and skills in data collection, checking data correctness, analysis, feedback and utilisation of information so that they can be in position to give technical support to health worker dealing with data collection and CHMT when ever needed. The CHMT should organise regular meetings for officers in charge of health facilities to analyse, interpreted , discuss and compare HMIS data, thereby increasing their understanding and motivation to properly collect routine data as well use information collected from health facilities in decision making and planning.

Geographical equity

The programme of expansion of health facilities should give priority to the most remote and underserved areas with high poverty levels and ill-health. To ensure staff motivation and retention, incentives mechanism should be in place for health staff working in disadvantaged areas. Health funding services should be strengthening in remote areas where there are inadequate health services.

Partnership

Resources are scarce and the competence also differs greatly between public and private health facilities. Public Private Partnership is very important for optimally use of available resources and avoiding overlaps, gaps and unnecessary competition for improvement of health of the population. Strengthening the linkage of relevant programmes is important for the health facilities to provide appropriately integrated MNCH services and other related services within the limited human resource capacity.

Recommended solutions for Non Health system factors

Community involvement and Empowerment

Community health education outreach services on maternal and child health should be strengthened. This service will be used to train pregnant women on issues regarding antenatal care including importance of getting intra-partum and postpartum care for their own safety and the newborn and encouraging delivery at health facility. Also education on maternal and child health is important for increasing child survival. Similarly male partners/father needs to be sensitized and mobilized in reproductive health issues.

The entire community including village health committee, health facility committees should be well educated on issues of maternal and child health including care for the newborns and best child feeding practices and nutrition education. These sessions will motivate families to give support to pregnant women to ensure early attendance to the health facilities during delivery and postnatal care to reduce early maternal and newborn death. Health programme should incorporate community education elements for easy uptake of health services. Besides, that will also increase community's ownership of health services and take responsibility in the management of the health facilities committees or boards. For health facilities to perform outreach services close to the households there must be a good collaboration with other governmental and non-governmental stakeholders with a good support system of transport such as motor cycles.

Gender equity in health

Although in most policies and strategies in Tanzania, gender issues are well addressed, translation into practical measures has not taken place to the expectation of the many. Men should be made aware of the special health needs of women and should take their responsibility in family health affairs. Gender sensitivity should also be a part of management to ensure that women are offered opportunities for higher management positions and participate in decision making bodies, like health facility boards and committees.

Conduct a situation analysis for newborn health and support of research activities

In reducing neonatal death more research is needed to answer a number of questions such as: Where and why are newborns dying and what is the coverage of life-saving care? Which existing policies provide a platform for saving newborn lives? Are there missed opportunities? Are there important health care gaps, such as the lack of an effective postnatal care package? Is there a systematic approach to supporting families to practice healthy home behaviours such as breastfeeding, good hygiene, and early care seeking for illness? Are there barriers to care – such as culture, or a lack of key staff or supplies, or high costs during childbirth, especially for caesarean sections? (HERA, 2006). Investment in research including cost-effective studies is important in identifying socio-cultural factors which affects the differences in uptake of health services and ensure effective use of available resource to best and more investment in health system.

Vulnerable groups' equity

Access to health services and social welfare for vulnerable groups in the society at all times is the commitment of the government. Exemption mechanisms for fee payment should be in full operation to support the poorest and most vulnerable in society at the time of need. Insurance systems, such as the Community Health Fund must have a mechanism to ensure there are inclusion criteria which will support the poor and vulnerable groups to access health services by any means like through subsidies and sponsoring.

LESSONS LEARNT

Despite efforts done to towards achievement of NSGPR goals, up to date quality data are very important to assess the progress towards achievements and enhance decision making for future planning. Besides many efforts which has been done to improve the situation of maternal and child (Neonatal) mortality without a comprehensive system of routine data collection and good information and management system areas which needs immediate attention cannot be rectified on time ,hence the overall efforts can be lost in vain. Still there is need for continues operation research which addresses specific concerns of the health system for informed decision making. Lastly improved economy at the country and household level have a direct effect in delivering and accessing quality basic service including good health care .Therefore addressing issue of income poverty in among the key factors for reducing maternal and child mortality to reach NSGPR.

REFERENCES

- Avery, M.E. & Snyder, J. (1989) GOBI-FFF:WHO initiatives for child survival. *American Academy of Pediatrics* 5 (9) 5.
- COWI,GOSS ,GILROY INC &EPOS (2007.) Joint External Evaluation of the Health Sector in Tanzania,1999-2006.
- Health Sector Performance Profile Report, Mainland Tanzania July 2006 – June 2007, MOHSW (2008)
- HERA (2006) Technical review of District health Services Delivery in Tanzania <http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=dmsa&part=A1437>
- HSSP (2008) *Health Sector Strategic Plan III* , Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.
- Kidanto, H.L., Massawe, S.N., Nystrom, L. & Lindmark, G. (2006) Analysis of perinatal mortality at a teaching hospital in Dar es Salaam, Tanzania, 1993-2003. *African Journal of Reproductive Health* 10 (2), 72-80.
- Manji, K. (2009) Situational analysis of newborn in Tanzania: Current Situation, existing plans and strategic next steps for newborn health .Dar-es-salaam: Ministry of Health and Social Welfare, Save the Children.
- Manji, K. (2008) Situation Analysis of Newborns in Tanzania. UNAPSA/SAPA Congress 2008. (Save The Children)
- MMAM/PHSDP (2007). Mpango wa Maendeleo wa Afya ya Msingi. Primary Health Services Development Programme, 2007-2017. Ministry of Health and Social Welfare, The United Republic of Tanzania.
- MoFEA (2005) National Strategy for Growth and Reduction of Poverty (NSGRP)
- MoHSW (2007) Mpango wa Maendeleo ya Afya ya Msingi (PHSD/MMAM) 2007-2017
- MoHSW (2008) Health Sector Performance Profile Report, Mainland Tanzania July 2006 – June 2007,
- MoHSW (2008) Health Sector Strategic Plan (HSSP) III .
- MoHSW (2008) The National Road Map Strategic Plan To Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania 2008 – 2015
- MoHSW (2008) .The National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania 2008 – 2015

- MoHSW (2007) *Sera ya Afya (Health Policy) 2007*
- Muhondwa E.P.Y, Chuwa M, Mponzi V, Kisusi H, Nyamhanga T, Mhamela and G Safe J. The Quality of Obstetric Care In Tanzania's Regional Hospitals
- Opportunity for Africa Newborn .WHO-for Partnership for Maternal Newborn and Child health(PMNCH),2006.
- Support to maternal mortality reduction project - Appraisal report 2006
- TDHS (2004/2005) *Tanzania Demographic and Health Survey*. National Bureau of Statistics and ORC Macro, Dar es Salaam, Tanzania. .
- UN (2009) Reducing Child Mortality. The challenges in Africa. UN Chronicle. A magazine for United Nations.
- Urassa E, Massawe S, Lindmark G and Nystrom L.(1997) Operational factors affecting maternal mortality in Tanzania. *Health Policy and Planning* 12(1):50-57
- Urassa, E, Massawe S, Lindmark G and Nystrom L. Operational factors affecting maternal mortality in Tanzania. *Health Policy and Planning* 12(1):50-57
- URT (2006) *Poverty and Human Development Report*. Dar es Salaam, Tanzania
- URT (2006) Support to maternal mortality reduction project - Appraisal report 2006
- WHO (2006) Neonatal and Perinatal Mortality .Country .Regional and global estimates.
- WHO (a) (2006) Opportunity for Africa Newborn .WHO-for Partnership for Maternal Newborn and Child health(PMNCH).

CHAPTER 6: IMPACT OF CLIMATE CHANGE ON HEALTH SECTOR

Summary: The world's climate is changing and will continue to change at rates projected to be unprecedented in recent human history. To the large extent climate change is due to human activities. Vulnerability to the risks associated with climate change may exacerbate ongoing socio-economic challenges, particularly among societies that depend on resources that are sensitive to changes in climate. In this Chapter we explore the nature of risk and vulnerability in the context of climate change on the health sector in Tanzania. The chapter focuses on the impacts of climate change on poverty reduction efforts in the context of sustaining progress toward the National Strategy for Growth and Poverty Reduction (NSGPR) and the Millennium Development Goals and beyond. Climate associated infectious diseases such as malaria, schistosomiasis, Rift Valley Fever, meningococcal meningitis, cholera, and other diarrhoeal diseases are discussed. The evidence on present-day adaptation in Tanzania is reviewed. The review has shown that there is no single policy document that is solely responsible for climate change in Tanzania. The National Environmental Management Act Policy of 1997 recognizes the importance of climate change. It calls for responsible ministries to put up measures to address climate change. The Minister responsible for environment is also mandated to issue guidelines in order to address climate change and its impacts. Recognizing the adverse impacts of natural disasters and calamities such as floods, droughts, landslides, insect pests, and disease epidemics to the socio-economy of the country, the government established a Disaster Management Division under the Prime Ministers Office. Epidemic Preparedness and Response Unit of the Ministry of Health and Social Welfare is responsible for disease outbreaks. A number of strategies and action plans related to climate change are also in place. These include the National Biodiversity Strategy and Action Plan, the National Action Programme, and the National Biosafety Framework. The National Environmental Policy of 1997 provides a framework for mainstreaming environmental considerations into the decision making process in Tanzania. All environmental management issues *inter alia* climate change are coordinated by the Vice President's Office. The government has put in place a National Climate Change Steering Committee (NCCS) and the National Climate Change Technical Committee to oversee and guide the implementation of climate change activities in the country. In conclusion, climate change threatens to slow, halt or reverses the progress Tanzania is making to achieve its NSGPR. It is therefore important that the country prepare itself to appropriately address its impact. Improved risk assessment is necessary to inform decision makers on health impacts from climate change and that it is important that policy actors and other stakeholders are engaged in a process to update and adapt priorities, mobilize resources and build interdisciplinary research and implementation capacity on climate change and its mitigation.

BACKGROUND

Climate describes the average day-to-day weather, including seasonal extremes and variations, for a specific location or region. On the other hand, climate change is a long term shift or alteration in the climate of a specific location, region, or the entire globe. The shift is measured by changes in some or all of the features associated with average weather, such as temperature, wind patterns, and precipitation. While climate change predictions suggest that there may be an increase in extreme weather events, careful attention must also be given to the more subtle, annual and within season variability in rainfall, temperature and wind patterns. There is however, an important distinction between changes due to seasonality and those due to climate change. Seasonality establishes rhythms and provides indications of when specific actions need to be taken. Climate change however, involves unexpected or unforeseen changes in weather patterns that have a range of livelihood consequences. Changes in weather patterns may be extreme, such as a cyclone or hurricane, while other changes may progress over longer periods of time, such as periods of drought and/or an increase in temperature over several years.

Global climate changes, largely a result of ozone depletion, are caused by human activities that release carbon dioxide and other greenhouse gases that trap heat within the atmosphere. As the

concentration of these gases in the atmosphere increases, climate models project that the average surface temperature will rise by 1.1°C to 6.4 °C in the 21st Century, with extremes potentially occurring beyond this range (IPCC, 2007). These changes are likely to have significant impacts on the fundamental determinants of human health, most notably on the ecosystems, and these impacts will be added to existing health burdens. There is important evidence to show that climate change and climate variability affect the availability of fresh water, food quantity and quality, as well as the occurrence and distribution of some infectious diseases and malnutrition (WHO, 2008).

The major impacts of climate change include severe floods, frequent and prolonged droughts, reduced water supply, decline in crop and livestock yields, rising sea levels and an increase in vector and water-borne diseases (Hunter, 2003). Heavy rains, floods, drought and landslides in Africa have culminated into displacement, food shortages and health disorders. Drought themselves have caused ill health due to lack of nutrition and infectious diseases and scarcity of clean and safe water. Malnutrition much of which is caused by periodic drought is responsible for an annual 3.5 million deaths of children under 5-year of age globally. Millions of people face further starvation due to a combination of climate change impacts, including crop failure, loss of livestock, lower water availability and quality. In East Africa, floods and heavy rains have been associated with epidemics of cholera, malaria, and Rift Valley fever (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5604a3.htm>). These extremes and unpredictable weather patterns are threatening to undermine the development efforts of the affected countries.

In May 2008, the World Health Assembly (WHA) passed a resolution calling for a stronger commitment of Member States and the WHO to protect health from climate change (www.who.int/globalchange/climate/EB_CHealth_resolution/en/index.html). In response to the WHA resolution, WHO convened a global consultation of public health researchers, practitioners, representatives of UN and other agencies, and donors, to respond to this request. The findings of this consultation included, among others, that research on climate change and health is within the overall context of improving global health, and health equity; that improved risk assessment is necessary to inform decision makers on health impacts from climate change (and their linkages with impacts in other sectors) locally as well as internationally; and, that the necessary research requires engagement of policy actors and other stakeholders in a process to update and adapt priorities, mobilize resources and build interdisciplinary research capacity.

In this Chapter we explore the nature of risk and vulnerability in the context of climate change on the health sector. The chapter focuses on the impacts of climate change on poverty reduction efforts in the context of sustaining progress toward the National Strategy for Growth and Poverty Reduction (NSGPR) and the Millennium Development Goals. It discusses the ways of mainstreaming and integrating adaptation to climate change into poverty reduction and sustainable socio-economic development efforts. The chapter is divided into an introduction providing a background on climate change in general and specifically in Tanzania. It then provides an overview of climate change related diseases and climate adaptation and its policy implications. It concludes with recommendations and the way forward.

This Chapter was written through desktop review of key policy documents, technical reports and publications as well as through Internet searches. The review was carried out from December 2009 to January 2010.

CLIMATE CHANGE IN TANZANIA

Tanzania has been experiencing real and visible impacts of climate change. The Initial National Communication (INC, 2003) has reported that the mean annual temperatures in Tanzania will increase by 2.1⁰C in the northern parts to 4⁰C in the central and southern parts of the country by 2100. The increase will markedly be observed particularly during the cool months. In terms of precipitation, an annual increase by 10% is expected by 2100. Climate projections indicate that northern and southern parts of the country would experience an increase in rainfall ranging from 5-45% and that most parts of the country might experience a decrease in rainfall of 10-15% (Mwandosya et al., 1998). During the past 30 years, there has been a steady increase in temperature, adversely affecting almost all sectors of the economy. Several droughts have been recurrent while water levels in Lakes Victoria and Tanganyika have dropped significantly. There has been a dramatic recession of seven kilometres of Lake Rukwa in the past 50 years. A similar phenomenon has been observed with Lake Manyara and many other small lakes in Tanzania. These accelerating impacts threaten the lives and health of most of the population. Rise in sea levels has been experienced in Tanzania. Islands of Maziwi (in Pangani) and Fungu la Nyani (on the Rufiji River estuary) are already submerged due to rise in sea level. It is predicted that other islands of Zanzibar and Mafia are likely to disappear under water by 2100 following rise in sea level caused by melting of polar ice.

Mount Kilimanjaro, the highest mountain in Africa, is undergoing rapid transformation. The snow-capped mountain is losing its 11,700 year old glacial top at an astounding rate. About 80% of glaciers on the mountain have been lost since 1912. It is expected that within the next 10-20 years, the summit will be bare (Thompson *et al.* 2007). Mount Kilimanjaro has fragile ecosystems that are important as source of freshwater, repositories of biological diversity, popular destination for recreation and tourism and area for important cultural diversity, knowledge and heritage. Climate change-related impacts on mountain ecosystems are likely to affect population by creating favourable conditions for disease vectors, forest fires, heavy snowfalls, major storms, floods and droughts (Ebi et al., 2007) as well as placing the mountain communities at high risk of malnutrition, diarrhoeal diseases and other environmental health effects attributable to climate change (Smith *et al.* 2004; Ebi et al., 2007).

Air pollution from greenhouse gases (GHGs) is predominantly from the manufacturing sector but increasingly the transport sector (due to old motor vehicles) is being recognized as a major polluter particularly in the big African cities. Household energy (including firewood, charcoal and kerosene use) and land use clearing are the other important contributors to air pollution.

Natural disasters such as landslides, droughts and floods are becoming common in Tanzania. In recent days, heavy rains accompanied with strong winds have left thousands of people displaced and without food in Muleba, Kilosa and Same districts (Daily News, November 25, 2009). Kilosa district experienced floods from end of December 2009 extending for several weeks in January 2010. The floods in Kilosa occurred after three dams burst their banks following heavy rains in Mpwapwa District in Dodoma Region, leaving thousands of people without shelter (The Citizen, January 18, 2010). In October 2009, Tanzania lost between 3,000 and 4,000 cattle in a decade's worst drought. Most affected districts were Ngorongoro, Longido and Monduli. The catastrophe has also prompted conflicts between pastoralists and other landowners, such as crop farmers and investors. Moreover, the indigenous peoples faced another challenge of lack of medicine because herbs were no longer readily available (<http://www.citizenjournalismafrica.org/>).

IMPACTS OF CLIMATE CHANGE ON HEALTH SECTOR

The impacts of climate change are global and affect all nations and peoples. Yet the most vulnerable are the poor and marginalized people from developing countries who depend most directly on their ecosystems for survival and, because of poverty, have the least capacity to adapt to the rapid changes that are affecting their environment (WHO, 2008). These include the poor who do not have access to adequate safe water, those who lack access to adequate sanitation (www.thelancet.com), those who lack access to land, credit or knowledge, including women and children and other vulnerable groups, and those who live in areas with declining biodiversity and food production capacities.

There is an increasing recognition of the pervasive effects that climate change will have on the human well-being. Changes in temperature and precipitation resulting in changes in soil moisture, increases in sea level and more extreme weather events, such as floods and droughts are among the most cited impacts of global climate change (IPCC, 2001). Increased weather variability may lead to less predictability in crop and livestock production, thereby threatening the well-being of those dependants on rainfall and the land for their livelihoods (Paavola, 2004). These long-term, human-induced changes will in turn affect natural climate variability and inevitably influence environmental, social and economic well-being.

Climate change may affect health outcomes and food utilisation with additional malnutrition consequences. Populations in water-scarce regions are likely to face decreased water availability, with implications for the consumption of safe food and drinking water.

Table 6.1: Potential impacts of climate change on the Millennium Development Goals

Millennium Development Goal	Examples of links with climate change
Goal 1: Eradicate extreme poverty and hunger	<ul style="list-style-type: none"> • Climate change is projected to reduce poor people's livelihood assets, health, access to water, homes, and infrastructure • Climate change is expected to alter the path and rate of economic growth due to changes in natural systems and resources, infrastructure, and labour productivity. • Climate change is projected to alter national food security
Goal 2: Achieve universal primary education	<ul style="list-style-type: none"> • Indirectly, loss of livelihood assets (social, natural, physical, human, and financial capital) may reduce opportunities for full-time education in numerous ways. Natural disasters and drought reduce children's available time (which may be diverted to household tasks)
Goal 3: Promote gender equality and empower women	<ul style="list-style-type: none"> • Climate change is expected to exacerbate current gender inequalities. Depletion of natural resources and decreasing agricultural productivity may place additional burdens on women's health and reduce time available to participate in decision making processes and income

	<p>generating activities.</p> <ul style="list-style-type: none"> • Climate related disasters have been found to impact more severely on female-headed households, particularly where they have fewer assets to start with
<p>Goals 4,5 and 6: Health related goals</p> <ul style="list-style-type: none"> • Combat major diseases • Reduce infant mortality • Improve maternal health 	<ul style="list-style-type: none"> • Climate change may increase the geographical distribution and prevalence of vector- and water-borne diseases • Children and pregnant women are particularly susceptible to vector and water-borne diseases. Anaemia – resulting from malaria – is responsible for a quarter of maternal mortality • Climate change will likely result in declining quality and quantity of drinking water, which is a prerequisite for good health, and exacerbate malnutrition – an important source of ill health among children – by reducing natural resource productivity and threatening food security
<p>Goal 7: Ensure environmental sustainability</p>	<ul style="list-style-type: none"> • Climate change will alter the quality and productivity of natural resources and ecosystems, some of which may be irreversibly damaged, and these changes may also decrease biological diversity and compound existing environmental degradation
<p>Goal 8: Global partnership</p>	<ul style="list-style-type: none"> • Climate change is a global issue and response requires global cooperation, especially to help developing countries to adapt to the adverse impacts of climate change.

Source: Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation (http://ec.europa.eu/development/icenter/repository/env_cc_varg_poverty_and_climate_change.en.pdf)

The causal chain through which climate change influence human nutrition is complex and involves different pathways. Both acute and chronic nutritional problems are associated with climate variability and change. The effects of drought on health include deaths, malnutrition (undernutrition, protein-energy malnutrition and/or micronutrient deficiencies), infectious diseases and respiratory diseases. Drought diminishes dietary diversity and reduces overall food consumption, and may therefore lead to micronutrient deficiencies. Malnutrition increases the risk both of acquiring and of dying from an infectious disease. Drought and the consequent loss of livelihoods is also a major trigger for population movements. Population displacement can lead to increases in communicable diseases and poor nutritional status resulting from overcrowding, and a lack of safe water, food and shelter (del Ninno & Lundberg, 2005). Climate change can adversely impact the availability of water supplies, the efficiency of local sewerage systems, and food security (Schmidhuber & Tubiello, 2007).

Climate change can affect human health and well-being through a variety of mechanisms. The risk of emerging zoonoses may increase due to changes and survival of pathogens in the environment, changes in migration pathways, carriers and vectors and changes in the natural

ecosystems. The distribution and seasonal transmission of several vector- or water-borne infectious diseases may also be affected by climate change. This is because, similar to adaptations that people make to their changing environment, infectious disease agents also adjust to their changing environment. Climate change can also result in direct injury and loss of life. For instance, violent weather can destroy shelter, contaminate water supplies, cripple crop and livestock production, tear apart existing health and other service infrastructures including roads. This will ultimately increase the existing burden of disease.

The pathogens that cause disease are in a state of perpetual adaptation, which can lead to the emergence of 'new' diseases or the spread of known diseases to previously unaffected areas. Diseases that experience a marked change in distribution, incidence and/or behaviour are often referred to as 'emerging or re-emerging diseases'. Factors that lead to the adaptation of infectious agents are complex and dynamic, ranging from deforestation, irrigation, species competition, human and animal migration patterns, drug resistance and changing vector lifecycle due to variations in temperature and rainfall (Patz et al., 2005)

CLIMATE CHANGE ASSOCIATED INFECTIOUS DISEASES

Predicted changes in climate and climate impacts will have direct and indirect impacts on human health. Warming is predicted to increase the incidence of vector-borne diseases such as malaria, Rift Valley fever, schistosomiasis and trypanosomiasis in Tanzania. The increased frequency of droughts and flooding is in turn likely to increase the frequency and magnitude of epidemics of water-borne diseases such as typhoid and cholera, as well as to influence the incidence of mosquito-borne diseases such as malaria and Rift Valley fever. Warming will also aggravate the impacts of air pollution on respiratory illnesses which already kill as many people as malaria and more than diarrhoeal diseases (see IPCC, 2001; McMichael et al., 1996; Patz et al., 2005). The infections that will spread with climate change have some commonalities (Shope, 1991). They are focal, and their distribution is limited by the ecology of their reservoir, be it arthropod, snail, or water. They usually have a two- or three-host life cycle, meaning that in addition to infecting people, they infect a vector and frequently also a wild vertebrate animal host. Either the vector or the host, or both, are the reservoir. The range of the reservoir is delineated by temperature and sometimes water.

Among the diseases that have been predicted to be climate change related in Tanzania include malaria, RVF, schistosomiasis, cholera, typhoid and meningococcal meningitis. This chapter will illustrate how these diseases may spread, and it will suggest how they may extend their geographic range and cause more serious human illness than currently encountered.

Schistosomiasis

Schistosoma mansoni and *S. haematobium* infections are prevalent in Tanzania. The life cycle of the parasite is complex involving snails, water, and human beings. The cycle is susceptible to environmental change, especially in water-associated stages. The snail hosts of schistosomes differ for each of the major species of parasite. The host of *S. haematobium* is the genus *Bulinus*, that of *S. mansoni* is *Biomphalaria*. The ecology of each genus of the parasite and snail differs, but some generalities hold. A major determinant of schistosome distribution is the distribution of the snail host. Snail populations are dependent on temperature, water, and water currents. Studies have established that ambient temperature is an important limiting factor of the survival of snails and of the shedding of cercariae (Iijima & Sugiura, 1962).

Aquatic birds have been implicated in the distribution of *Biomphalaria* and *Bulinus* snails to new areas. This accidental airborne transport is very effective in seeding new sites (Burch, 1975). In addition, these snails are hermaphroditic in nature and can self-fertilize and increase in numbers rapidly, once transported. If the temperature rises sufficiently, it is likely that some of the present foci of schistosomiasis will be too hot to support the parasite. Areas of Africa on the east and west coasts already have high temperatures, and it has been suggested that this is the reason why *Biomphalaria* has not colonized these zones (Sturrock, 1965). On the other hand, other areas in highlands, now too cold to support the host snails, can be expected in the future to be favourable ecologically for schistosomiasis.

Rift Valley Fever

Rift Valley fever is caused by a virus in the family Bunyaviridae, transmitted by mosquitoes and also through inhalation of aerosol from the infected blood and afterbirths of sick animals. Transmission in humans is via direct contact through infected animal products or contaminated foods or aborted fetuses and from mosquito bites. The disease is characterised by outbreaks that follow heavy rains and the consequent emergence of large numbers of *Aedes* and *Culex* mosquitoes.

The reservoir of the Rift Valley fever virus in sub-Saharan Africa has been a mystery. After heavy rains, epizootics start, involving sheep and cattle. The rains flood large depressions, called "dambos" and from these depressions hatch massive number of *Aedes* mosquitoes (Linthicum et al., 1985). The mosquito itself appears to be the reservoir and, since rain is needed to hatch the eggs and heavy rain only occurs every few years, this phenomenon may explain the long periods between epidemics.

RVF epidemics in Tanzania have been recorded to occur in 1956, 1978-79, 1997-98 and 2007. In January 2007, an outbreak of Rift Valley fever was detected among humans starting from northern Tanzania districts, but later spreading southwards and westwards to affect other parts of the country. A total of 511 suspect RVF cases were reported from 10 of the 21 regions of Tanzania, with laboratory confirmation of 186 cases and another 123 probable cases. All RVF cases were located in the north-central and southern regions of the country, with an eventual fatality rate of 28.2% (N = 144). A total of 169 of the 309 (55% confirmed or probable cases) were also positive for malaria as detected by peripheral blood smear. Contact with sick animals and animal products, including blood, meat and milk, were identified as major risk factors of acquiring RVF (Ministry of Health and Social Welfare, unpublished report). Affected regions were Manyara, Tanga, Dodoma, Morogoro, Dar es Salaam, Coast, Iringa, Mwanza and Singida.

RVF is known to be endemic in most of the Sub-Saharan African countries. Between epidemic waves, RVF virus circulates at very low incidence without noticeable clinical manifestation, in both humans and animals (FAO, 2003; Swai & Schoonman, 2009). In a study in north-eastern Tanzania, a sero-prevalence of RVF virus of 4.02% was observed among apparently health individuals (Swai & Schoonman, 2009).

Malaria

Malaria is by far the most important vector-borne disease causing high morbidity and mortality in Tanzania. The endemicity and pattern of malaria transmission is focal and varies from place to place depending on many factors including climate and topography. Until recently, malaria has been a common disease in low altitude rural areas of Tanzania (Clyde, 1967). However, due to changes in socio-economic, environmental, and vector related factors, the disease is now common in previously malaria-free areas. To-date over 8.6% of 34,569,232 (2.973 million) of the people in Tanzania live in malaria unstable areas prone to epidemics, with high mortality

during the rainy season (Ministry of Health, 2000 unpublished report). Until recently, malaria epidemics have been reported from highland areas of Muheza, Babati, Hanang, Mbulu, Ngorongoro, Mpwapwa, Muleba, Sumbawanga and Lushoto (Mboera & Kitua, 2001; Mboera, 2004).

Factors influencing malaria epidemics in Tanzania include environmental changes. Environmental changes that result from global and local processes are likely to have had some effects on vectors of malaria in these areas. Matola *et al.* (1987) had already shown that vegetation clearing that occurred in the East Usambara Mountains played a significant role in the increase of malaria transmission in the area. The introduction and increase of malaria incidence in the Western and Eastern Usambara Mountains has been a result of ecological changes that have favoured an increase in vector densities. Socio-economic activities and deforestation might have all resulted in a rise in vector population densities that appears to have enabled increase in malaria in the area. The current upper height limit for malaria in the African highlands is difficult to define precisely, and is likely to rise.

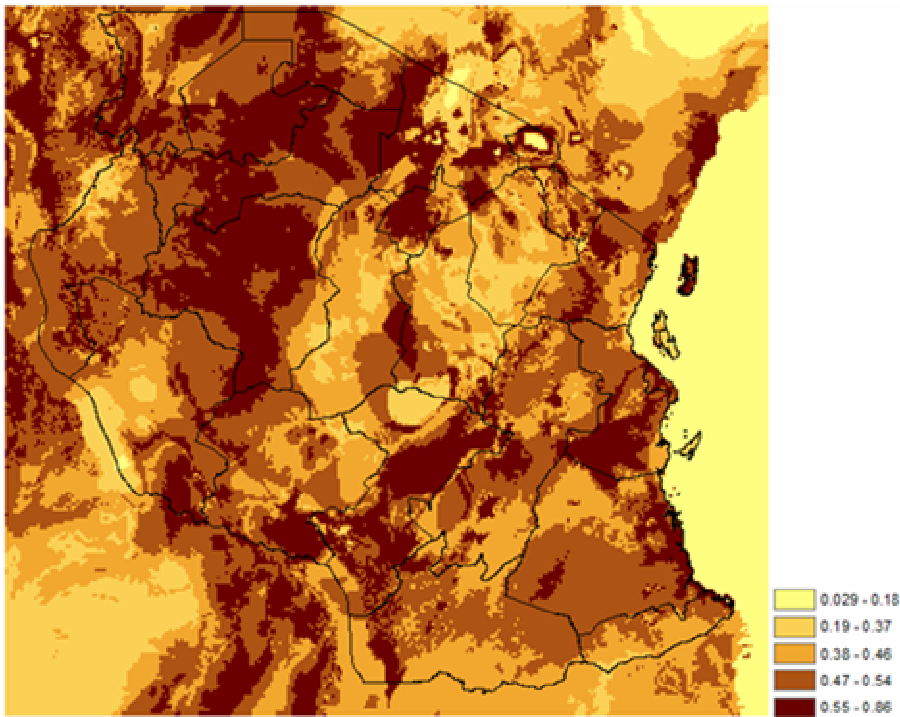


Figure 6.1: Modelled malaria endemicity in Tanzania

Figure 6.1 shows modelled malaria endemicity in Tanzania using an outpatient reported cases from 2004 to 2008 in relation to mean minimum and maximum temperatures, and mean precipitation. The model indicates that almost the whole of Tanzania is endemic for malaria, with spatial variation between areas. According to the model mean precipitation accounts for 72.8% of the variation in malaria, while mean maximum temperature accounts for 14.1% and mean minimum temperature 13.1%

A common characteristic of many affected areas prior to the epidemics is that they had suffered a recent period of drought and were recognised as having serious food security problems (WHO, 2001). Moreover, epidemics following drought periods appear to catch health services unawares and the result are often high fatality rates. Further support for the link between food security issues and epidemic malaria comes from the study of a devastating epidemic recorded in Mbulu

District in 1942 (Clyde, 1967) and Muleba District (Garay, 1998). The risk of mortality from malaria during the Muleba epidemic was observed to be 7 times higher in malnourished than well nourished children giving support to the view that the consequences of epidemic malaria are most intensely felt in communities where food entitlement is constrained. Findings of some studies (Mboera *et al.*, 1999) have suggested that a delay in seeking medical care has contributed highly to loss of life. Such delays have been aggravated by destruction of the infrastructure as observed in Muleba district during the 1978 malaria epidemics.

The impact of climate variability and malaria can be explained by the fact that as altitude increases temperature declines and both the development and survival of the mosquito vector and parasite are critically dependent on the ambient temperature. As the temperature drops so does the risk of infection, and there is a typical threshold below which transmission ceases.

There is, therefore, an urgent need to explore the basic malaria epidemic predictive factors and establish a sustainable surveillance system. It is important to investigate and determine factors, related to both the community and environment that can be utilised to identify groups at risk and risk factors that might suggest detection of malaria epidemics in Tanzania. Measurements of important indices relating to malaria transmission are essential in the epidemiological assessment and control of the epidemics. The indices quantify the potential risk of malaria infections and also describe numerically the dynamics of transmission. It is essential to understand the factors that cause increased vector densities and hence the transmission of malaria to prevent its epidemics, as well as to serve as a basis for effective control. At a more sophisticated level, satellite data on vegetation and humidity could be used to predict conditions favourable for mosquito breeding.

Cholera and other diarrhoeal diseases

Diarrhoea is one of the biggest killers of children in developing countries. Water-borne viral and bacterial infections can cause severe diarrhoea in children, often locking them into a vicious cycle of undernourishment, susceptibility to other infectious diseases, and eventually death. In countries with inadequate water and sanitation services, diarrhoea is much more common when temperatures are high (WHO, 2009). Both flooding and unusually low levels of water can also lead to water contamination and bring higher rates of illness and death from cholera and other forms of diarrhoea (Hashizume *et al.*, 2008). Warming and greater variability in rainfall threaten to increase the burden of this diseases. Warmer surface temperatures increase the abundance of phytoplankton, which supports a large population of zooplankton, which serves as a reservoir for cholera bacteria.

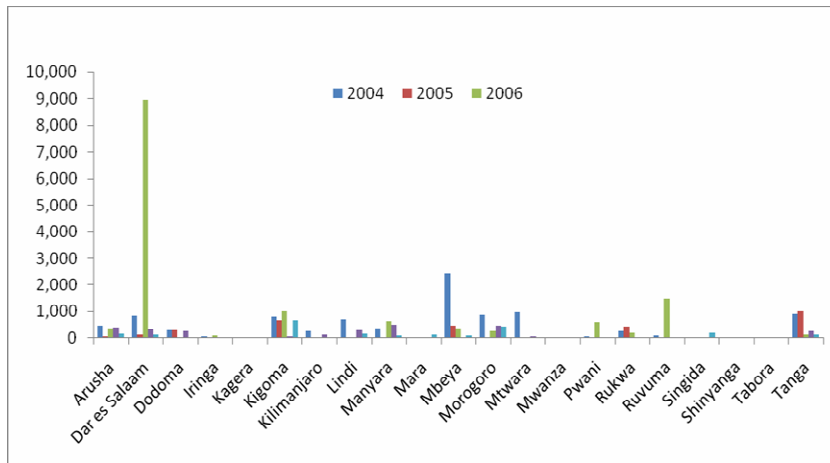


Figure 6.2: Cholera trend in Tanzania by region, 2004-2006

The combination of higher temperatures, prolonged droughts and floods coupled with scarce water resources and poor sanitation make countries in Eastern, Central and southern Africa vulnerable to outbreaks of cholera and other waterborne diarrhoeal diseases. A study has already shown that during the 1997-98 El Niño, a rise in sea surface temperature coupled with excessive flooding emerged as two significant factors in cholera epidemics in Djibouti, Somalia, Kenya, Tanzania, and Mozambique. Another study in Lake Victoria basin has shown that the incidences of high cholera epidemics coincide with high flow peaks and high temperatures before and during El Niño years (Wandiga et al., 2006). Nonetheless, analysis of annual cholera trends indicates an irregular cyclical pattern; with general increase in cases and a reduction in interval between peaks. Recent analysis has shown that the five coastal regions in Tanzania are among the top-eight regions by number of cases per capita (Taylor, 2009).

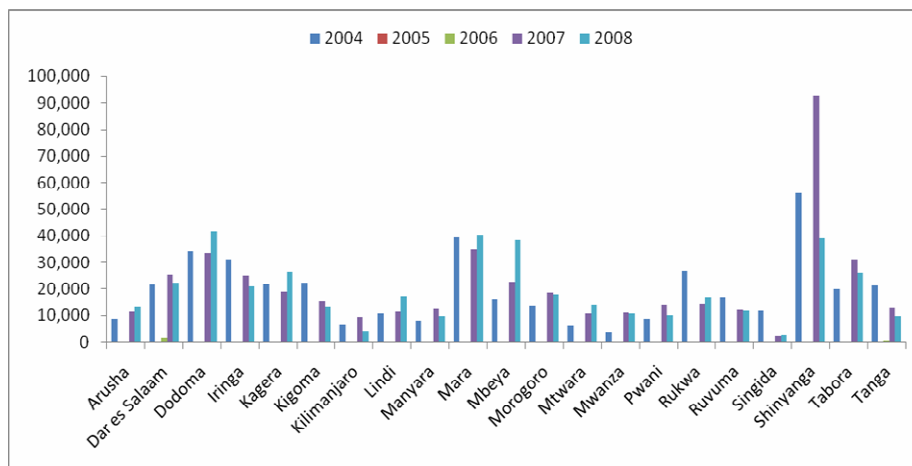


Figure 6.3: Diarrhoea trend in Tanzania by region, 2004-2008

Meningococcal Meningitis

Countries within the ‘Meningitis Belt’ in semi-arid sub-Saharan Africa experience the highest endemicity and epidemic frequency of meningococcal meningitis in Africa, although other areas in the Rift Valley, the Great Lakes, and southern Africa are also affected. The spatial distribution, intensity and seasonality of meningococcal meningitis appear to be strongly linked to climatic and environmental factors, particularly drought. Meningitis outbreaks only occur during the dry season, when temperatures fall at night and people huddle together for warmth. This is also the time in which the dry, dust-laden winds blow from the north, damaging the mucous membranes of the respiratory system. Climate plays an important part in the interannual variability in transmission, including the timing of the seasonal onset of the disease. The expansion of geographical distribution of meningitis in West Africa in recent years has been attributable to environmental change driven by both changes in land use and regional climate change (Confalonieri et al., 2007). Though a number of factors including crowding, population displacement, herd immunity, etc., influence the interannual prevalence of meningitis in Africa, the seasonality of the disease connects infection and climate.

CLIMATE CHANGE AND OTHER HEALTH-RELATED PROBLEMS

The public health effects of global warming in Africa are related to the rising temperatures, severe water shortages and extreme events such as frequent and severe droughts, floods and

storms. Climate change has impact on agriculture and food security; water supply and occurrence of extreme natural hazards, urbanisation, health systems and poverty.

Climate and food security

Increased intensity and frequency of drought and flooding, altered hydrological cycles and precipitation variance have implications for future food availability. A report from the Food and Agriculture Organization states that agricultural productivity in developing countries may decline by 9-21% by mid-century due to climate change (FAO, 2007). Another report from the International Food Policy Research Institute says growing population and loss of production due to climate change will lead to increases in food prices. Higher temperatures, declining rainfall and water scarcity and floods in Tanzania are impacting negatively on food production resulting in food insecurity. Decreased agricultural productivity in the coming years could lead to hunger and famine in some communities severely affected by climate change. This would in turn increase illness and death of vulnerable groups including women and children (Shongwe, 2009).

Water supply

Most of the climate change impacts in Africa are associated with rainfall variability and scarcity of water resources. Water scarcity is already a major problem for the world's poor. The number of people impacted by water scarcity is projected to increase from about 1.7 billion people today to around 5 billion people by 2025, independent of climate change (IPCC, 2001). Climate change is projected to further reduce water availability in many water scarce regions, particularly, subtropics, due to increased frequency of droughts, increased evaporation, and changes in rainfall patterns and run-off. The dramatic reductions of the snow and glaciers of Mount Kilimanjaro in Tanzania is a result of global warming. These glaciers could vanish in the next fifteen years. The glaciers of Mt. Kilimanjaro act as frozen water reservoir and supply the towns and communities around the mountain. Several rivers around Moshi town near Mt. Kilimanjaro are drying up due to global warming. This is already impacting negatively on production of coffee, bananas, maize and other crops (Agrawala et al., 2003; Shongwe, 2009).

Water resources have been decreasing over time as a result of persistent droughts and land use patterns. Climate change will exacerbate water shortages resulting in reduction of hydro power and increasing the incidence of waterborne diseases. The impact of severe water shortages in Tanzania will be greatest in arid and semiarid areas. Climate change and global warming are already impacting negatively on hydro power generation in Tanzania, and therefore resulting in frequent power outages.

Climate change-induced droughts, flooding and other extreme weather events degrade and reduce portable water supplies and increases water-associated diseases such as cholera and diarrhoea, particularly in areas with inadequate sanitary infrastructures. Inadequate access to safe drinking water and sanitation, combined with poor hygiene practices, are major causes of ill health and life-threatening disease in developing countries. Women are particularly exposed to water-associated diseases through their traditional chores of washing and water collection.

Almost 90% of the burden of diarrhoeal disease is attributable to lack of access to safe water, sanitation (WDR, 2010; Prüss-Üstüm et al., 2008)) and reductions in the availability and reliability of freshwater supplies are expected to amplify this hazard.

Extreme events and natural disasters

Globally, the numbers of reported weather-related natural disasters is mounting rapidly, and have more than tripled since 1960s. In 2007 alone, over 90% of the appeals for emergency humanitarian assistance were for floods, droughts and storms (John, 2008). Although more

numerous reports of natural disasters are partly due to population growth in high risk areas, but is likely that climate change is also a contributing factor. This means, climate change has increased the frequency and severity of extreme events such as floods, droughts and storms causing deaths, injuries, famines, disease outbreaks, psychological disorders and population displacements. Floods, droughts and famine are the best known natural disasters in Tanzania. In recent years Tanzania has experienced droughts (Ngorongoro district) and floods (Kilosa) that have resulted in injuries, deaths and displacement of thousands of people. Outbreaks of diseases such as malaria and cholera are common sequelae of floods. Droughts have a direct impact on health, particularly in children. It has been established that underfives born during drought years are more likely to be undernourished and stunted (Speranza et al. 2008)

Population displacement associated with natural hazards compromises health and damages lives. By destroying ecological and agricultural systems and by flooding communities, climate change can eventually force people to abandon where they live in order to seek new homes and livelihoods. Forced displacement is associated with a range of health issues, including social isolation and mental disorders, and in many cases, reduced socio-economic status and associated health problems.

Climate change and urbanization

Tanzania major cities such as Dar es Salaam, Arusha, Mbeya, and Mwanza are the fastest growing cities. The rapid urbanization poses challenges for infrastructure and services. Limited access to water, electricity and sanitation could increase vulnerability to outbreaks of waterborne diseases including cholera (Shongwe, 2009). For a number of years, heavy downpours in Dar es Salaam have been followed by outbreaks of cholera, especially in areas of relatively low water table (Mayala et al., 2003).

Across Africa, 45% of the urban population lacked access to improved sanitation and clean drinking water in 2000. In Tanzania, 54% (urban=79%; rural=45%) of the households have access to improved water supplies (Taylor, 2009). According to the most recent surveys, most households in Tanzania have access to some sort of latrine, the vast majority of these being pit latrine. However, the questions remain on the utilisation of such latrine on household sanitation. Open defecation is common in some areas contributing to the contamination of water and land within cities as well as of the waterborne disease prevalent in slums (UNHSP, 2006). Flooded areas and ditches, latrines and septic tanks are key reservoirs that perpetuate cholera in urban areas. Infectious disease outbreaks are also precipitated by the high population density found in these areas, with overcrowding triggering epidemic-prone infections (Patel & Burke, 2009; Unger & Riley, 2007).

Since climate change is associated with more extreme precipitation events and rising sea-levels, our cities will also experience more severe and more frequent flooding (Ramin, 2009). Urbanization creates flood-prone conditions by covering the ground with pavement and buildings, and by building urban drains, causing runoff water to move more rapidly into rivers than under natural conditions (Douglas et al., 2008). The urban poor build houses of weak, inadequate materials, often against hillsides that are subject to landslides during heavy rains (Unger & Riley, 2007). Climate change can result in damage to sanitation infrastructure resulting in the spread of disease or threatening a community's ability to maintain its economy, geographic location, or cultural-tradition leading to mental stress.

Climate change and Health systems

Climate change is emerging as a major threat to health and adding pressure on public health systems. A changing climate can increase the frequency, intensity or duration of extreme weather

conditions which increases risks for vulnerable populations and communities in areas exposed to natural hazards. Climate change will affect, in profoundly adverse ways, some of the most fundamental pre-requisites for good health: clean air and water, sufficient food, adequate shelter and freedom from diseases (WHO, 2009). All these, will have negative implications for the achievement of the health-related Millennium Development Goals and for health equity.

Most often extra pressure is placed on health care services by increased demands resulting from weather-related natural hazards such as floods. Disruptions of social networks are not uncommon. Electric power outages can occur as a result of extreme weather-related events, which can affect our ability to communicate and carry out some operations during emergencies. There is interference with livelihoods such that people experience stress if their livelihoods and productivity are threatened. Climate change can increase the number of extreme weather events which can damage buildings, roads, and other infrastructure. This causes trauma for people having to relocate, as occurred following the recent rains in Same and Kilosa districts. Virtually all our infrastructures are designed for a specific climate, such as those related to food production, water management, energy production, storm sewer, drainage and sanitation systems, and housing and health infrastructures. Health risks can arise when any one of these systems fails or becomes compromised - as they may in a changing climate. As an illustration, severe weather events can result in loss of income and productivity, relocation of people, increased stress for families, and higher costs for health care and social services.

Climate Change and Poverty

In most countries in Africa, high levels of poverty and dependence on subsistence farming by the majority of the population increases vulnerability to climate change. Poverty is also associated with deforestation and environmental degradation which predisposes the population to famine, hunger, malnutrition and infectious diseases. Climate change is a serious risk to poverty reduction and threatens to undo years of development efforts.

Climate change is expected to have effects on the overall economy of poor countries, thus hampering potential for economic growth. In addition, poor adaptation will increase the impacts of extreme events, increasing the costs of rehabilitation and diverting funds from longer term development purposes. Current extreme weather events are already taking their toll in Tanzania's economy, leading to loss of human and economic capital. Regions where climate change exacerbates climatic extremes and which have limited adaptive capacity will be further constrained in their development prospects due to additional loss of life, private assets, reduced productivity of important economic sectors, and destruction of infrastructure.

Climate change vulnerability and adaptation in Tanzania

Vulnerability, poverty and disease are tangled in a complex set of socio-economic and environmental conditions that can create heightened susceptibility to illness among certain individuals within a community. Understanding the determinants of health is fundamental to understanding how communities and individuals adapt to avoid risk and illness. Vulnerability is also tightly linked to inequity with respect to access to resources, decision-making power and capacity to cope. The continued prevalence of illness and vulnerability stems itself in part in the continued inequality within and between households, communities and countries. Inequality affects vulnerability directly by constraining the options available to households and individuals when faced with external shocks, and indirectly through its various links to poverty. Factors such as the ability to mitigate increased vulnerability associated with illness, access to timely diagnosis and care, and access to adequate nutrition all play a role in managing vulnerability and disease progression. These factors are in turn affected by behavioural and societal norms, such as

the ability to control resources needed for health-seeking and protection behaviour and the perception that specific symptoms merit an immediate investment of time and resources.

For many communities, adaptation to climate change has been a survival strategy that has been well-refined over time. Increasing variability and frequency of unusual weather events places the livelihoods of those most vulnerable to climate change at risk by testing their ability to adapt. Innovation, knowledge and coping strategies often exist within the fabric of social structures at the community level (Yamin et al., 2005).

The impacts of climate change and the vulnerability of poor communities to climate change, vary greatly, but generally, climate change is superimposed on existing vulnerabilities. Climate change will further reduce access to drinking water, negatively affect the health of the poor people, and will pose a real threat to food security in many developing countries. In some areas where livelihood choices are limited, decreasing crop and livestock yields threaten famines.

Although all populations will be affected by a changing climate, but the initial health risks vary greatly, depending on where and how people live. Health effects are expected to be more severe for elderly people and people with infirmities or pre-existing medical conditions (WHO, 2009). The groups who are likely to bear most of the resulting disease burden are children and the poor, especially women. The major diseases that are most sensitive to climate change – diarrhoea, vector-borne diseases like malaria, and infections associated with undernutrition – are not serious in children living in poverty.

Supporting community-led adaptation means putting communities' centre-stage in determining which vulnerabilities are addressed and how they are addressed. In order to understand the true implications of climate change on those most vulnerable, impacts must be viewed from within the context of their everyday lives.

Assessment of vulnerability and adaptation to climate change in various sectors in Tanzania form part of the Initial National Communication (INC). Currently, there are two disaster vulnerability assessment reports conducted in 2002 and 2003 which reveal the situation at the community level. The two assessments contain very valuable information which contributes to an increased understanding of the vulnerability to climate change in Tanzania. Among the major causes of the vulnerability at village, district and national levels include epidemics, drought, pest/vermin/plant diseases and floods. Through the National Adaptation Programme of Action, various coping strategies have been identified. Those related to health are summarized in Table 6.2.

Table 6.2: Vulnerabilities and adaptation activities related to climate change impacts on health

Health problem	Vulnerability	Existing adaptation activities	Potential adaptation activities
Vector borne diseases;	<ol style="list-style-type: none"> 1. Emergency of highland malaria 2. Rift Valley Fever epidemic 3. More cases of schistosomiasis 4. Increased rates of cholera and other diarrhoeal diseases 5. Meningitis epidemics 	<ol style="list-style-type: none"> 1. Integrated Disease Surveillance and Response strategy is in place and operational to prevent, mitigate and respond to epidemics 2. Presence of Emergency Preparedness Unit that coordinate and manage all health related hazards which include epidemics 	<ol style="list-style-type: none"> 1. Strengthen the Health Management Information System and Integrated Disease Surveillance and Response 2. Establish and strengthen community awareness programmes on disease prevention 3. Strengthen collaboration between

			the health sector and Tanzania Meteorological Agency 4. Develop new and strengthen available Early Warning Systems and Emergency measures 5. Strengthen health systems (financial and human resources; medical supplies; equipment)
Malnutrition	Severe shortage of food and high incidence of malnutrition, especially to children	Adaptive capacity is low due to low GDP per capita, widespread poverty, inadequate land distribution, and low education levels. There is also an absence of social safety nets, in particular after harvest failures.	Establish and strengthen community awareness programmes on food security and malnutrition

Many adaptation mechanisms need to be strengthened by making progress in areas such as good governance, human resources, institutional structures, public finance, and natural resource management. Such progress builds the resilience of the country, communities, and households to all types of shocks, including climate change impacts. Strategies to cope with current climate variability should provide a good starting point for addressing adaptation needs in the context of poverty reduction. Progress will require improved governance, including an active civil society and open, transparent, and accountable policy and decision making processes, which can have a critical bearing on the way in which policies and institutions respond to the impact on climatic factors on the poor. Adaptation efforts will require first steps towards mainstreaming climate issues into all national, regional, district and sectoral planning processes, such as poverty reduction strategies. It is equally important that a ministry with a broad mandate, such as finance and economic affairs is been encouraged to be fully involved in mainstreaming adaptation. There must be combined approaches at the government and institutional level with bottom-up approaches rooted in regional, national and local knowledge. Empowerment of communities is necessary so that they can participate in assessments and feed in their knowledge to provide useful climate-poverty information. They will also need full access to climate relevant information systems. Access to good quality information about the impacts of climate change is important. This is a key for effective poverty reduction strategies. Early warning systems and information distribution systems held to anticipate and prevent disasters.

Since the rate and pattern of economic growth is a critical element of poverty eradication, and climate factors can have a powerful bearing on both, integration of impacts will prevent climate change diverting limited resources into disaster relief and recovery activities and away from long-term development priorities. The national budget process should be the key process to identify climate change risks and to incorporate risk management so as to provide sufficient flexibility in the face of uncertainty.

An approach that uses both mitigation and adaptation is needed. Current commitment to mitigate climate change by limiting the emission of greenhouse gases will not, even if implemented, stabilize the atmospheric concentrations of these gases. Developing adaptive capacity to

minimise the damage to livelihoods from climate change is a necessary strategy to complement climate change mitigation efforts. Climate change adaptation – all those responses to climatic conditions that reduce vulnerability- should therefore be an integral and urgent part of overall poverty reduction strategies. Adaptation should not be approached as a separate activity, isolated from other environmental and socio-economic concerns that also impact on the development opportunities to the poor. A comprehensive approach is needed that takes into account potential synergistic and antagonistic effects between local and global environmental changes as well as socioeconomic factors.

CLIMATE CHANGE RELATED POLICIES IN TANZANIA

Policy frameworks

There is no single policy document that is solely responsible for climate change in Tanzania. The National Environmental Management Act Policy of 1997 recognizes the importance of climate change. It calls for responsible ministries to put up measures to address climate change. The Minister responsible for environment is also mandated to issue guidelines in order to address climate change and its impacts as a result of global warming. Although the Policy has been in place for 13 years now, still the guidelines are yet to be developed.

Recognizing the adverse impacts of natural disasters and calamities such as floods, droughts, landslides, insect pests, and disease epidemics to the socio-economy of the country, the government created a Disaster Management Division under the Prime Ministers Office, to deal with these issues. Moreover, recently, a National Adaptation Programme of Action (NAPA) had been developed. NAPA is linked with other national development policies, goals, objectives, plans, strategies and programmes and supports/complements strategies and programmes of other multilateral environmental agreement that Tanzania is engaged. These include: the United Nations Convention to Combat Desertification (UNCCD), United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD), Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Vienna Convention on the Protection of Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer.

A number of strategies and action plans related to some of these conventions are in place (NAPA, 2007). These include the National Biodiversity Strategy and Action Plan (NBSAP), the National Action Programme (NAP), and the National Biosafety Framework (NBF). The National Environmental Policy (NEP) of 1997 provides a framework for mainstreaming environmental considerations into the decision making process in Tanzania. Though NEP does not pay explicit attention to climate change, the primary environmental issues brought forward include many of the concerns that would be addressed by non-regrets climate change adaptation measures. NEP highlights the importance of integrating environmental management in several sectoral programmes and policies.

The National Forest Policy (NFP) of 1998 is another climate change related policy. One of the objectives of the NFP is to ensure ecosystems stability through conservation of forest biodiversity, water catchments, and soil fertility. The policy states that new forest reserve for conservation will be established in areas of high biodiversity value and that biodiversity conservation and management will be included in the management of plans for all protected forests. On the other hand, the Reduced Emissions from Deforestation and Forest Degradation (REDD) initiative is among the recent efforts envisaged to play a significant role in climate

change mitigation and adaptation (REDD, 2009). The legal framework in support of environmental management in Tanzania promote sustainable forest management and protection which are important for the implementation of REDD policy.

Coordination of Climate Change Issues

In accordance with the Environmental Management Act of 2004, all environmental management issues *inter alia* climate change are coordinated by the Vice President's Office. In line with this Act, the functions of the Division of Environment approved by the President in February 2007, mandates the Division to coordinate all climate change issues including adaptation and mitigation. The government has put in place a National Climate Change Steering Committee (NCCS) and the National Climate Change Technical Committee to oversee and guide the implementation of climate change activities in the country. However, information on how much the NCCS has prepared the country to mitigate climate change impacts on health and health systems is not available.

Disaster Management

Several Acts and Ordinances govern the management of disasters in Tanzania. Among them is the *Disaster Management Act No. 9 of 1990*. The Disaster Management Act derives its power from the Constitution of the United Republic of Tanzania of 1977. The Constitution empowers the President to proclaim a state of emergency if there is imminent occurrence of dangerous disaster, which threatens the communities or part thereof in the United Republic of Tanzania. Correspondingly, at the regional and district levels, the respective Regional and District Commissioner, is the appropriate authority to declare a regional/district disaster situation.

In addition to the Disaster Management Act, several others legal documents are important in the management of disease epidemics. These include:

- *Infectious Disease Ordinance Cap 96*
- *Public Health (Sewerage and Drainage) Ordinance Cap 336*
- *Local Government (Urban Authorities) Act, 1982*
- *Local Government (District Authorities) (Miscellaneous Amendments) Act, 1999.*

Disaster management requires an integrated multi-sectoral approach, which provides for a comprehensive and active participation and interaction of all key players. The Tanzania Disaster Relief Coordination Committee (TANDREC) (forming part of the Prime Minister's Office) is the established body responsible for disaster management in the country. The TANDREC is the body that has been assigned leadership and coordinating responsibilities for the nation's disaster management system. Its job is to lead the country in developing and maintaining a national disaster preparedness and management system that helps people to protect themselves, their families, property and environment from all disasters.

The Disaster Management Department is the Central Government Agency specifically created as a Secretariat to the TANDREC to coordinate and supervise disaster management activities in the country. The functions of the Department are set up in the *Disaster Management Act No. 9 (1990)*. Disaster problems addressed in Tanzania include: (i) disease epidemics; (ii) drought leading to famine; (iii) vermin, pest infestation and animal diseases; (iv) transport accidents; (v) conflicts; (vi) floods; (vii) fires; (viii) earthquakes; and (ix) landslides (URT, 1990).

In recognition of the public health importance and the implications of emergencies and disasters to the well being of the society, the Government of Tanzania, through the Ministry of Health and Social Welfare, has established a functional unit of emergency preparedness and response to address all health aspects of emergencies and disasters in the country. This unit, which is under

the Chief Medical Officer office, is called the *Emergency Preparedness and Response Unit* (EPRU). Among other many functions, the Unit is responsible to collaborate with other departments in the Ministry of Health and Social Welfare in controlling major epidemics and other health emergencies and disasters.

Epidemic preparedness includes measures taken to enhance the abilities of individuals, communities, districts and the nation to respond to disease outbreaks. Epidemic preparedness is one of outbreak management's fundamental tasks, since prevention and mitigation actions cannot completely eliminate epidemics. Preparedness activities are directed towards facilitating emergency response, thus reinforcing mitigation or outbreak containment measures (URT, 1991; 2002; MoH, 2004).

CONCLUSION AND RECOMMENDATIONS

There is now a consensus that the earth is warming due to emissions of carbon dioxide and other greenhouse gases caused by human activities. The current trends in energy use, development and population growth will lead to continuing and more severe climate change. Societies have adapted to past changes in climate, although some with much more difficulty than others. Enhanced capacity to adapt to the impacts of climate change on health can reduce the associated threats to human health and wellbeing. By generating and acquiring new knowledge or synthesizing existing knowledge on anticipated future climate change risks and their possible consequences, responses to these stresses can be faster, more efficient and effective. Better organizing institutions, processes and actions around present and anticipated health challenges across sectors and levels of decision-making can also help with preparedness. Ultimately, societies should be able to avoid, prepare for, and effectively respond to health impacts related to climate change. In addition, assessing possible climate impacts could be an opportunity for institutions and policy-makers to discuss how to do better development; to build individual, community and institutional capacity; and to improve response to certain health and environmental problems. The development and documentation of cases of adaptation to climate related health challenges, would be an important contribution to ongoing efforts in Tanzania.

It is clear that climate change is happening and will increasingly affect the poor. Adaptation is therefore necessary and there is need to integrate responses to climate change and adaptation measures into strategies for poverty reduction to ensure sustainable development. In view of its negative impacts, adaptation to climate change is a priority for ensuring the long-term effectiveness of our investment in poverty eradication and sustainable development.

Traditional coping mechanisms at household and community levels are backward looking, based on historical experience and observation. In the face of changing patterns of climate variability, and the significant deviations from historical experience, their effectiveness may be significantly reduced. The 1998 high rainfall due to El Nino was followed by a two-year period of erratic rainfall. This climatic shock caused some of the poorer farmers to give up maize farming and opt instead to sell their labour at farms in other more productive areas. The resulting dependence on physical working capacity as their sole endowment increased vulnerability, since malnutrition and disease can reduce their capacities for manual labour. Climate change may thus force drastic changes to livelihood strategies. Where economic diversification is low, income opportunities and hence option for developing alternative livelihoods in response to climatic changes may be limited. In some cases migration, which is an important coping strategy for poor people, might be the only solution, but will potentially cause social disruption.

The changes in climate happen gradually and if prompt actions are taken timely, there is time to learn more about the epidemiology and ecology of the climate related diseases. There will also be time to devise better control and prevention strategies. Tanzania should aim to devise better direct intervention measures for these diseases. However, we also need more information about vector agents, modes of transmission, reservoirs, and the effect of temperature, rainfall, and other climate-related parameters on the vectors, vertebrate hosts, and the agents of disease themselves. Studies of ecology at the periphery of the ranges of the agents and their reservoirs would be especially valuable. Such information could be used to predict more accurately which of the diseases to target as threats, and which will be less likely to spread and/or become more severe. Attribution to current and future climate change related disease burdens is a challenge because the determinants of diseases are complex. The magnitude and factors affecting climate change related diseases among communities in Tanzania need to be better quantified. Research and information on the links between climate-change related diseases are therefore, necessary.

Weather and climate forecasts and early warnings systems needs to be developed and implemented. Such systems can be used to provide information that enables and persuades people and organizations to protect themselves and their property, and thereby reduces the deaths, injury and damage caused by the hazards. However, in the long run, the greatest health impacts of climate change may not be from acute shocks of epidemics or natural disasters, but from the gradual build-up of pressure on the natural and socio-economic systems that sustain health, and which are already constrained by HIV/AIDS, malaria and tuberculosis. These gradual stresses include reductions and seasonal changes in the availability of fresh water, drops in crop and livestock production, and rising sea levels. Each of these changes has the potential to force population displacement and increase the risks of civil conflicts.

It is only when the climate change issues are addressed adequately that Tanzania would be able to make headway in the achievements of the development goals, including those contained in the National Strategy for Growth and Reduction of Poverty; Development Vision 2005; and MDG. MDG Number 6 and 7 deal with HIV/AIDS, Malaria and other diseases; and ensure Environmental Sustainability, respectively. These are among the MDGs that are directly related to food, health and climate.

Through the contribution of modern meteorological and hydrological sciences and technology it is possible to provide communities threatened by potential climate disasters with information to instigate timely preventive action. Governmental organizations, the media, non-governmental organizations and other key stakeholders need to create effective preparedness plans, warning systems, mitigation strategies and public education programmes. Local capacity building for basic and applied research is essential to allow regular assessment of diseases, particularly the ecological, social and economic determinants of diseases.

Climate change challenges the achievement of the Millennium Development Goals (MDGs) and NSGRP and sustainable development objectives. Unless concrete and urgent steps are undertaken to reduce vulnerability and enhance adaptive capacity of poor people, and unless these actions are integrated in national strategies for poverty eradication and sustainable development, it may be difficult to meet some MDGs by 2015.

It is important that government initiate and strengthen programmes to raise awareness of potential health impacts of climate change and action needed to reduce likelihood of adverse health outcomes to all key stakeholders including the communities. The government should bring together stakeholders with a role in the climate change agenda to discuss and agree on a

common strategy to address climate change and its impact on socio-economic development. Through these strategies, it is envisaged that the Tanzania population will have increased knowledge of potential health impacts of climate change; will be more aware of how climate change impacts on different groups within the population; will be able to identify key groups including professionals, politicians, policy makers and community groups who have roles to play in reducing likelihood of adverse health outcomes from climate change and will ultimately, be more aware of what action is needed to reduce likelihood of adverse health outcomes.

REFERENCES

- Agrawala, S., Moehner, A., Hemp, A., van Aalst, M., Hitz, S., Smith, J., Meena, H., Mwakifwamba, S.M., Hyera, T. & Mwaipopo, O.U. (2003) Development and Climate Change in Tanzania: Focus on Mount Kilimanjaro. OECD.
- Alilio, M.S., Njunwa, K.J. & Msuya, F.H. (1995). The changing pattern of malaria mortality and morbidity in Ngorongoro District, Arusha: Social economic assessment. *Annual Report of the National Institute for Medical Research*, 14, 31.
- Burch, J.B. 1975. Freshwater molluscs, pp. 311-321. In: N.F. Stanley and M.P. Alpers (Ed.) *Man-Made Lakes and Human Health*. Academic Press, New York, NY.
- Clyde, D.F. (1967). Malaria in Tanzania. Oxford University Press.
- Confalonieri, U., Menne, B., Akhtar, R., Ebi, K.L., Hauengue, M., Kovats, R.S., Revich, B. & Woodward, A. (2007) Human Health. In: *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change., pp. 391-431. Cambridge University Press, Cambridge, UK
- del Ninno, C. & Lundberg, M. (2005) Treading water: the long term impact of the 1998 flood on nutrition in Bangladesh. *Environ Hum Biol* 3, 67-96.
- Douglas, I., Alam, K., Maghenda, M., McDonnell, Y., Mclean, L., Campbell, J. (2008) Unjust waters: climate change, flooding and the urban poor in Africa. *Environment and Urbanization* 20:187-205.
- FAO (2003) Recognizing the risk of Rift Valley Fever. In: FG Davies & V. Martin, (ed). *FAO Animal Health Manual* 17, 13-15.
- FAO (2007) Adaptation to climate change in agriculture, forestry and fisheries: Perspective, frameworks and priorities. FAO, Rome.
- Garay, J. (1998) Epidemiological survey and situation analysis: Malaria epidemic in Nshamba Division, Muleba District, Tanzania. 47 pp. MSF Spain.
- Hashizume, M. (2008) The effect of rainfall on the incidence of cholera in Bangladesh. *Epidemiology* 19, 103-110.
- Health Sector Performance Profile Report, Mainland Tanzania July 2006 – June 2007, MOHSW (2008)
- Iijima, T. and S. Sugiura. 1962. Studies on the temperature as a limiting factor for the survival of *Oncomelania nosophora*, the vector snail of *Schistosoma japonicum* in Japan. *Jap. J. Med. Sci. Biol.* 15:221-228
- IPCC (2001) *Intergovernmental Panel on Climate Change (IPCC). 2001. Climate Change 2001: Impacts, Adaptation, and Vulnerability*. Cambridge. Cambridge University Press.
- IPCC (2007) *Climate Change 2007: Impacts Adaptation and Vulnerability. Contributions of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge, UK: Cambridge University Press.
- John, A. (2008) UN aid chief worried by food inflation, weather. Reuters, 29 January 2008.
- Linthicum, K.J., F.G. Davies, A. Kairo and C.L. Bailey. 1985. Rift Valley fever virus (family Bunyaviridae, genus *Phlebovirus*). Isolations from Diptera collected during an inter-epizootic period in Kenya. *J. Hyg. Camb.* 95:197-209.
- Matola Y.G., White, G.B. & Magayuka, S.A. (1987). The changed pattern of malaria endemicity and transmission at Amani in the eastern Usambara mountains, north-eastern Tanzania. *Journal of Tropical Medicine and Hygiene*, 90, 127-134.
- Mayala, B.K., Mboera, L.E.G. & Gwacha, F. (2003) Mapping cholera risks using Geographical Information System in Ilala District, Tanzania. *Tanzania Health Research Bulletin* 5, 8-12.

- Mboera, L.E.G. (2004) Environmental and socio-economic determinants of malaria epidemics in the highlands of Tanzania, *Tanzania Health Research Bulletin* 6, 11-17.
- Mboera, L.E.G. & Kitua, A.Y. (2001) Malaria epidemics in Tanzania: An overview. *African Journal of Health Sciences* 8, 14-18.
- Mboera, L.E.G., Kamugisha, M.L., Njunwa, K.J., Mutalemwa, P., Kitua, A.Y., Salum, F.M. & Makunde, W.H. (1999). Study on epidemiological factors related to malaria epidemics in Babati, Dodoma and Lushoto districts of Tanzania. *Report of the Project ID 001/98 submitted to the National Institute for Medical Research.*
- McMichael, A.J., Haines, A., Slooff, R. & Kovats, S. (1996) *Climate Change and Human Health.* Geneva: World Health Organisation (WHO).
- MoH (2004) *Disease Outbreak Management: A Field Manual for Council Health Management Teams.* Ministry of Health, United Republic of Tanzania. Version 1. February 2004.
- Mwandosya, M. J., Nyenzi, B. S. and Luhanga, M. L. 1998. *The Assessment of Vulnerability and Adaptation to Climate Change Impacts in Tanzania.* Dar-es-Salaam, Tanzania: Centre for Energy, Environment, Science and Technology (CEEST).
- Paavola, J., (2004) *Livelihoods, Vulnerability and Adaptation to Climate Change in the Morogoro Region, Tanzania.* Centre for Social and Economic Research on the Global Environment (CSERGE), Working Paper EDM 04-12.
- Patel, R.B. & Burke, T. (2009) Urbanization- an emerging humanitarian disaster. *New England Journal of Medicine* 361, 741-743.
- Patz, J.A., Campbell-Lendrum, D., Holloway, T. & Folley, J.A. (2005) Impact of regional climate change on human health. *Nature* 438, 310-317.
- Pruss-Ustun, A. et al. (2008) *Safer Water, Better Health: Costs, Benefits and Sustainability of Interventions to Protect and Promote Health.* Geneva, World Health Organization, 2008.
- Schmidhuber, J. & Tubiello, F.N. (2007) Global food security under climate change. *Proceedings of the National Academy of Science* 104, 19703-19708.
- Shongwe, S.V. (2009) The impact of climate change on health on the East, Central and Southern African (ECSA) region. *Commonwealth Health Ministers' Update.*
- Shope, R.E. (1992) Impacts of global climate change on human health: Spread of infectious disease. Chapter 25 of *Global climate change: Implications, challenges and mitigation measures*, ed. S. K. Majumdar, L. S. Kalkstein, B. Yarnal, E. W. Miller, and L. M. Rosenfeld, 363-70. Easton, PA: The Pennsylvania Academy of Science.
- Speranza, C.I., Kiteme, B. & Wiesmann, U. (2008) Droughts and famines: the underlying factors and causal links among agro-pastoral households in semi-arid Makueni district, Kenya. *Global Environmental Change* 18, 220-233.
- Sturrock, R.F. 1965. The development of irrigation and its influence on the transmission of Bilharziasis in Tanganyika. *Bulletin of the World Health Organization* 32, 225-236.
- Swai, E.S. & Schoonman, L. (2009) Prevalence of Rift Valley Fever immunoglobulin G antibody in various occupational groups before the 2007 outbreak in Tanzania. *Vector-borne and Zoonotic Diseases* 9, 579-582.
- Taylor, B., (2009) Situation Analysis of Women, Children and the Water, Sanitation and Hygiene Sector in Tanzania. UNICEF.
- Thompson, L., Mosley-Thompson, E. & Mark, B. (2007) *Core Project: Low latitude glacier retreat: Evidence of accelerating climate change and impacts on local to regional water resources.* CWC Funded Project.
- Unger, A. & Riley, L.W. (2007) Slum health: from understanding to action. *PLoS Medicine* 4: e295-doi: 10.371/journal.pmed.0040295.
- UNHSP (2006) *State of the World Cities 2006/7.* United Nations Human Settlements Programme. London: Earthscan Publications.
- URT (1991) *The Disaster Relief Coordination Regulations,* Tanzania.
- URT (2002) *National Operational Guidelines for Disaster Management (Draft Report).* Prime Ministers' Office, United Republic of Tanzania, March 2002
- Wandiga, S.O., Opondo, M., Kathuri, J., Olago, D., Apindi, E., Olaka, L., Githeko, A., Githui, F., Opere, A., Ogallo, L., Marshall, M., Downs, T., Yanda, P.Z., Kangalawe, R., Sigalla, R., Kabumbuli, R., Kiramura, E., Mugambi, P., Nanyunja, R., Baguma, T., Achola, P. (2006) *Climate Change*

Induced Vulnerability to Malaria and Cholera in the Lake Victoria Region: Final Report for Project No. AF 91. Published by the Assessments of Impacts and Adaptations to Climate Change (AIACC). The International START Secretariat, Washington, DC. (Available at: www.aiaccproject.org)

WDR (2010) *World Development Report 2010*. Washington DC, World Bank 2009.

WHO (2008). Report on the Review of Primary Health Care in the African Region. World Health Organization, Geneva Switzerland.

WHO (2009) *Protecting Health from Climate Change. Connecting Science, Policy and People*. World Health Organization. [Hppt://www.who.int.globalchange_en](http://www.who.int/globalchange_en).

WHO (2001) *Malaria Early Warning Systems. Concepts, Indicators and Partners: A framework for field research in Africa*. WHO/CDS/RBM/2001.32, Geneva.

Yamin, F., Rahman, A. & Huq, S. (2005) Vulnerability, adaptation and climate disasters: a conceptual overview. *IDS Bulletin* 36, 1-14.