THE FOURTH TANZANIA NATIONAL HEALTH RESEARCH PRIORITIES 2013-2018

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FOREWORD

I am extremely delighted to be given this honour to write a foreword of this important document. First of all, I would like to congratulate Tanzania National Health Research Forum and the National Institute for Medical Research for spearheading the process of priority setting in health research in Tanzania. I would like to recognize the participation of the Ministry of Health and Social Welfare, other ministries, non-governmental organizations, universities and research institutions for their enthusiasm and inputs that enabled the completion of the exercise.

We are all aware that Tanzania, like many other Sub-Saharan African countries, is currently challenged by a growing number of communicable and non-communicable diseases, including HIV/AIDS, tuberculosis, malaria, cardiovascular conditions, and maternal and neonatal health. All these are complicated with the weak health systems. We all know that equitable and sustained access to care, support and treatment are essential to improve the well-being and life expectancy of our people. However, Tanzania is also faced by challenges pertaining to finances, infrastructure, human and logistical factors. The burden of disease in Tanzania from social and environmental determinants of health is still substantial. Globalization, population movements, climate change and the global financial crisis have put a heavy burden on health systems in Tanzania and other developing countries. These and other challenges need more powerful and more comprehensive research agenda - to ensure that diseases are prevented and health outcomes are improved.

I am sure; you will all agree with me that the national priorities in health research should change over time. New health problems and new diseases continue to emerge and re-emerge. In recent years we have witnessed emergence of Lujo virus, Dengue fever, Ebola, Hepatitis C, Severe Acute Respiratory Syndrome, Avian Influenza, Rift Valley fever, Marburg fever, Yellow fever and Chikungunya virus infections. In addition, we have witnessed the emergence of resistant strains of microorganisms including malaria parasites, H IV, and multi-drug resistance in tuberculosis. These examples, illustrate the changing epidemiological profiles of diseases of public significance, which necessitate similar changes in our focus and resource allocation.

Over the years, health problems of the marginalised urban communities have received very low attention in the African region and Tanzania, in particular. The majority of the urban populations still live in cities where the air quality guidelines for particulate matter are exceeded. Health issues related to the "urban poor" are now being brought to light given the rapid expansion of slums in many cities in Africa. We are all aware that over recent years, traffic-related injuries have increased substantially. I am glad that in this new priorities, health priorities of the vulnerable and marginalised groups have been taken on board. Engagement of marginalized and vulnerable community groups in research and development makes good economic, scientific, and moral sense. It can, for example, achieve more efficient allocation of resources for research by better revealing the full extent of societal demand for various resources.

New methods of disease management and control are coming up. Introduction of antiretroviral (ARV) therapy for AIDS patients has brought new challenges that need to be addressed in our research agenda. The successful malaria, HIV, Human papilloma virus vaccine trials are indications for more research on our delivery systems. With the existence

of effective interventions comes the need for improved access to them. Social determinants of health are crucial for the understanding of health inequities, and they hold the key to finding lasting solutions to mitigate these acute social problems. I understand that Tanzania has vast experience in setting its health research priorities taking on board both global and national goals, including the Millennium Development Goals (MDG) and the National Strategy for Growth and Reduction of Poverty (NSGRP). A number of initiatives have been developed since 2006. It is imperative therefore, that in addition to evidence-based research, the current national goals including NSGRP II and the Health Sector Strategic Plan III have been considered in the setting the current health research priorities.

I am proud that, during the past 33 years, since the National Institute for Medical Research was established, we have made tremendous achievements. We have identified new health problem targets, tested and used new tools for disease intervention and health care delivery. NIMR and other research institutions in the country have not only contributed to this role directly by active participation but also indirectly by providing evidenced-based advice to the Government. We have actively involved our research institutions in advocacy, programme implementation, progress reviews and result monitoring to ensure a process that has ownership by all. This partnership should continue to facilitate the process of health priority implementation.

Priority setting is important for a number of reasons. In general, in the health arena there is a persistent gap between what should be attainable, given the present level of knowledge, capacity and resources. In the process of setting national health priorities focus is to be made on the fundamental questions of whose voices are heard, whose views prevails and whose health interest is advanced. It is also important that the country identifies priorities based on equity and social justice.

We can no longer ignore the fact that the increasingly complex health challenges demand multi-sectoral collaborations, going a mile beyond purely health sector issues. I am extremely impressed by the fact that Tanzania Commission for Science and Technology has facilitated the involvement of several sectors in setting health research priorities. In addition, let me recognize the contribution of the Tanzania National Health Research Forum (TANHER Forum) in coordinating the health research priority setting exercises in Tanzania.

Dr. Hussein Ally Mwinyi, MP
Minister for Health & Social Welfare
March 2013

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A very special word of thanks goes to members of the Editorial Committee, namely Leonard Mboera, Emmanuel Makundi, Kijakazi Mashoto, Susan Rumisha and Elizabeth Shayo. Godfrey M. Mubyazi, Ndekio Uriyo, Deus Ishengoma, Bilali Kabula, Adiel Mushi, Leonard Maboko, Martha Lemnge and William Kisinza, are thanked for their critical review of the early version of the report.

We are grateful to the Chair of Tanzania National Health Research Forum, Dr. Godwin Ndossi for facilitating the Stakeholders Consultative Priority Setting Workshop. Many thanks to Council on Health Research and Development, and especially to Kathy Douglas for facilitating capacity strengthening in priority setting through the Research for Health Africa Project. Last, but not least, we are thankful to all persons and groups that have been committed to seeing that the priority setting exercise have been accomplished in time.

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Mwelecele N. Malecela
Director General
National Institute for Medical Research

EXECUTIVE SUMMARY

Background: Setting priorities for health research is essential to maximize utilisation of the meagre resources allocated to health sector and is regarded as a key factor in an effort to strengthen national health research systems.

Methods: Preparations of the current health research priorities (2013-2018) started in 2009 and covered a number of activities. A review of the implementation of the National Health Research Priorities of 2006-2011 was carried out to identify research agenda, research projects and publication during the respective period. The review also aimed at identifying research subject areas addressed. A review of the most prevalent diseases/conditions reported through the Health Management Information System was also carried out. In addition, baseline studies were carried out to determine health research and policy priority areas of policy and decision makers, district health managers, vulnerable and marginalised communities. The vulnerable and marginalised groups included the pastoralists, hunters and gatherers of Mbulu District and people living with disability in Ilala District. For the district priorities, a questionnaire was sent out to 121 District Medical Officers (DMO) in Tanzania. In addition, four districts were selected to determine community priorities. At national level, three workshops were held. A stakeholders' workshop to discuss, identify and agree on priority policy questions in health systems that are likely to come onto the policy agenda in Tanzania was held in March 2009. In May 2011, a multi-sectoral workshop on health research priority setting was held in Bagamoyo. The priority setting exercise was finalized in a consultative stakeholders' workshop held in Dar es Salaam in November 2012. At community level, Nominal Group Technique was used to set priorities. The criteria used to set the national health research priorities were *Appropriateness, Relevancy, Feasibility, Impact of Research Outcome* and *Opportunity to Strengthen Collaboration with Partners*.

Findings: A total of 24 health research/health related institutions were identified and, information was available for 16 institutions. A total of 669 research proposals were registered during the period under review. Of these 55.8% (N=373), 31.2% (N=209), and 13.0% (87) were biomedical, health systems and socio-cultural researches, respectively. Majority of research projects and publications were on biomedical thematic area. Policy priority areas identified by policy makers were health financing, multisectoral oriented policies; and integrated health care approach.
Overall, malaria, HIV/AIDS and complicated labour were identified as high priority research areas by pastoralists, hunters and gatherers and the disabled and other community members. Diabetes and skin cancers were considered of high priority by the elderly and albinos, respectively. Issues related to inadequate health service infrastructures, shortage of health workers and medicines were identified as research priorities by almost all groups. Exemption policy was also a major concern of the physically disabled people, people living with albinism and 'vulnerable' women. Food taboos, polygamy, and female genital mutilation were identified as priority areas by hunters and gatherers. Malaria, acute respiratory infection, diarrhoea, pneumonia, Intestinal worms, skin infections, urinary tract infection, eye infection, trauma and injuries were identified as 10 ten priority areas by district health managers. While district officials identified shortage of health workers, transport problems, shortage and delay of funds, inadequate medical equipment and supplies and poor infrastructure as priority service problems, community members identified water scarcity as number one priority area. Participants of the multi-sectoral priority setting workshop ranked communicable diseases, reproductive and maternal health, health systems, newborn and child health, food and nutrition and non-communicable diseases as the highest priority areas on health research. Finally, the national key stakeholders categorised the national health priorities into biomedical, health systems and social determinants of health. Communicable and non-communicable diseases and reproductive, maternal, newborn and child

health were the highest priority areas of biomedical research. Of the health systems, medicines and medical supplies, human resources and health financing ranked as areas of highest priority. Stigma and discrimination, gender-based violence and sexual abuse and customs, traditions and beliefs were considered as highest priorities under the social determinants of health thematic area.

Conclusion: Tanzania has developed a list of national health research priorities for 2013-2018. Like in the previous health research priorities, communicable diseases, reproductive, maternal and child health and non-communicable diseases are considered to be top-most priority areas in biomedical research. In addition, medicine and medical supplies, human resource for health and health financing are the most important priority health system research areas. On the other hand, stigma, gender-based violence and sexual abuse and customs, traditions and beliefs have are the most important areas under the social determinants of health that need to be prioritised in the coming five years.

CHAPTER 1

HEALTH RESEARCH IN TANZANIA

1.1. Historical perspective

Modern health research was introduced into Tanganyika (now Tanzania) by the colonial German government in the late 1890s. Research during the time was focused on malaria and tuberculosis – leading to the discovery of the cause of tuberculosis by Dr. Robert Koch and malaria diagnosis by Dr. Gustav Giemsa. After World War 1, Tanganyika under the British Colonial Government continued with health research on specific disease problems to satisfy their need. The main focus of the research was on malaria, lymphatic filariasis, Trypanosomiasis and schistosomiasis. It was during this post war period that institutionalised health research was initiated. In 1922, the British Colonial Government, under the leadership of Dr. Frank Apted, established a Sleeping Sickness Service Unit in Tabora. The Unit which is now Tabora Research Centre is therefore the oldest Medical Research Unit in the country. During 1940s, the Colonial government launched researches on lymphatic filariasis in the Lake Victoria Zone. This was followed by the establishment of the East African Medical Survey at Malya in 1947. In 1948 Filariasis Research Unit was opened in Mwanza. In 1954, the East African Medical Survey and Filariasis Research Unit were merged to form the East African Institute for Medical Research.

In 1949 an East African Malaria Unit (EAMU) was established at Ubwari, Muheza in northern Tanzania by Captain Dr. Bagster Wilson. In 1951, the Unit was moved to Amani in the East Usambara Mountains. The EAMU was renamed 'East African Malaria Institute' (EAMI) and became operational under the East African High Commission. In 1954, the EAMI was renamed the East African Institute of Malaria and Vector Borne Diseases. In 1957, the Swiss Tropical Institute founded a Field Laboratory (STIFL) in the Kilombero District. In 1991, STIFL was renamed Ifakara Centre and became an affiliate of the National Institute for Medical Research. In 1996, Ifakara Centre was registered as an independent Trust under the name Ifakara Health Research and Development Centre. The Centre was renamed Ifakara Health Institute in 2008. In the mid-1970s, the Medical Research Council of UK established a Helminthiasis Research Unit at Bombo Hospital in Tanga. The Unit was taken over by the National Institute for Medical Research and renamed Tanga Research Centre in 1979.

In January 1963, the East African Common Services Organization formed the East African Medical Research Council (EAMRC) which was mandated to build capacity of the Medical Research Institutions in the region through the recruitment and training of indigenous research personnel from the partner states of Uganda, Kenya and Tanzania. The EAMRC was also required to coordinate and set health research priorities. In 1968, the EAMRC established a Tuberculosis Investigating Unit in Dar es Salaam. The Unit then worked as the National Tuberculosis Reference Laboratory and later as the Tanzania National Tuberculosis Reference Laboratory. Following the collapse of EAC in 1977, the Government of the United Republic of Tanzania re-organized the medical research institutions into the National Institute for Medical Research.

1.2. National Institute for Medical Research

The National Institute for Medical Research (NIMR), as a parastatal Institution under the Ministry of Health, was established by the Parliament Act No. 23 of 1979 and became operational in 1980. NIMR was empowered to take over all health research institutions in the country which until the demise of the East African Community in 1977, were administered by the East African Medical

Research Council. The establishment of NIMR was in recognition by the government of the need to generate scientific information required in the development of better methods and techniques of enhancing disease management, prevention and control in the country.

The National Institute for Medical Research is mandated to carry out the following functions:

1) to carry out and promote the carrying out of medical research designed to alleviate disease among the people of Tanzania;
2) to carry out and promote the carrying out of research into various aspects of local traditional medical practices for the purpose of facilitating the development and application of herbal medicine;
3) to cooperate with the government or any person, or body of persons, in promoting or providing facilities for, the training of local personnel for carrying out scientific research into medical problems;
4) to monitor, control and coordinate medical research carried out within Tanzania, or elsewhere on behalf of or for the benefit of the government of Tanzania, and to evaluate the findings of that research;
5) to establish a system of the registration of, and to register the findings of medical research carried out within Tanzania, and promote the practical application of those findings for the purpose of improving or advancing the health and general welfare of the people of Tanzania;
6) to carry out and promote the carrying out of research and investigation into the causes of, and the ways of controlling and preventing the occurrence of particular diseases or category of them including: (i) bacterial, viral, rickettsial, helminthic or protozoal, infective and parasitic diseases; and (ii) non-infective diseases of the mental, nutritional, neoplastic, haematological, degenerative or other categories;
7) to carry out and promote the carrying out of basic applied and operational research designed to provide effective measures for the control of diseases endemic in Tanzania; and
8) to establish a library for reference by medical scientists and a medical museum.

NIMR envisions "*A Tanzania where people enjoy quality health and well-being*". NIMR has a mission to *"Conduct, Coordinate, Regulate and Promote Scientifically and Ethically Sound, High Quality Health Research in Order to Deliver Evidence-Based Information that is Responsive to the Broader Needs of the Tanzanian Community"*

Apart from NIMR, health research is one of the core functions of the following Institutions: Ifakara Health Institute, Muhimbili University of Health and Allied Sciences, Catholic University of Health and Allied Sciences-Bugando, Kilimanjaro Christian Medical University College, Kilimanjaro Clinical Research Institute, Tanzania Food and Nutrition Centre, African Medical Research Foundation, Nelson Mandela African Institute of Science and Technology, University of Dodoma, University of Dar es Salaam, Sokoine University of Agriculture and Mzumbe University.

1.3. National Health Research System in Tanzania

During the early 1990s Tanzania initiated a comprehensive programme of national health-sector reforms. In this context some important steps have been taken to strengthen the country's health research system including the creation of the Tanzania National Health Research Forum in 1998, and the revision of national health research priorities.

Tanzania's long-term development goals are set out in Vision 2025 (URT, 1999) and The Tanzania Five Year Development Plan (URT, 2011), with shorter term national goals being articulated in the National Strategy for Growth and Reduction of Poverty, popularly known as *MKUKUTA* (URT, 2005, 2010). Health-specific objectives are specified in the National Health Policy (Sera ya Afya,

2007), the Primary Health Service Development Strategy (MoHSW, 2007) and the Third Health Sector Strategic Plan (MoHSW, 2008). The Tanzanian Development Vision 2025 (URT, 1999) aims to achieve high quality livelihood for all Tanzanians through strategies which will ensure (i) access to quality primary health care for all; (ii) access to quality reproductive health service for all individuals of appropriate ages; (iii) reduction in infant and maternal mortality rates by three quarters of current levels; (iv) universal access to clean and safe water; (v) life expectancy comparable to the level attained by typical middle-income countries; (vi) food self sufficiency and food security; and (vii) gender equality and empowerment of women in all health parameters.

There is no specific legislation for health research in Tanzania. However, a National Research and Development Policy (MoCST, 2010) recognises and guides the health research sector in the country. The Government of the United Republic of Tanzania realises the importance of conducting research and the utilisation of evidence in the improvement of health services as indicated in the National Research and Development Policy of 2010 (MoCST, 2010), and the NIMR Act of 1979. The National Science and Technology Sub-Master Plan (2003 – 2018) recognizes the strategic importance of research by stating that national research agenda should focus on the eradication of poverty. It is strategically emphasized that research agenda of various national institutions should be consistent with the national research agenda. According to the National Research and Development Policy of 2010, most researches are conducted by public and private research and higher learning institutions. However, a number of researches including health are being conducted outside formalized institutions.

The National Research and Development Policy (2010) is central to the national development with a vision to be a nation with a strong, dynamic, resilient and a competitive economy that is both knowledge based and innovation driven. The mission is to develop research system that will increase the outcome and efficiency of Research and Development, leading to sustainable socio-economic development. The General objective of the National Research and Development Policy is to provide guidance to researchers in the public and private sector, policy and decision-makers, as well as development partners in addressing present and future national research challenges for socio-economic development.

The Tanzania National Health Policy (Sera ya Afya, 2007) aims to improve the health and well being of all Tanzanian 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 policy mission is to facilitate the provision of equitable, quality and affordable basic health services, which are gender sensitive and sustainable, delivered for the achievement of improved health status. The National Health Policy has eight objectives. One of the objectives of the policy is to reduce the burden of disease, maternal and infant mortality and increase life expectancy through the provision of adequate and equitable maternal and child health services, facilitate the promotion of environmental health and sanitation, promotion of adequate nutrition, control of communicable and non-communicable diseases and treatment of common conditions. The government aims to ensure the availability of medicines, reagents, medical supplies and infrastructures; and also ensures that the health services are available and accessible to all the people in the country.

The Ministry of Health and Social Welfare is currently implementing its Third Health Sector Strategic Plan (HSSP) 2009–2015 (MoHSW, 2009). The HSSP III provides an overview of the priority strategic directions across the sector which are guided by the National Health Policy 2007, Vision2025, the National Programme for Economic Growth and Poverty Reduction and the Millennium Development Goals. Detailed policies, strategies and work plans are in place for health related issues and for disease control.

1.4. Health Research Regulation

The Medical Research Coordinating Committee (MRCC) of the National Institute for Medical Research is the national regulatory and coordinating body responsible for review and evaluation of the technical and ethical aspects of research proposals involving human subjects at national level. The mandate put forth regulations that ensure that all health research undertaken in the country is conducted according to the International and national accepted ethical guidelines. MRCC is ensures that all health research follows country's ethics requirements. The MRCC has delegated functions of registering, ethical review, approving and monitoring of research to be carried in Tanzania to the National Health Research Ethics Review Sub-Committee (NatHREC). NatHREC was established in 2002 and is responsible for ensuring health research proposals are reviewed to safeguard the dignity, rights, safety and well being of research participants. Institutions carrying out or hosting health research are encouraged to have institutional review committees to safeguard their image by ascertaining the quality of the research output. NatHREC is also responsible for overseeing all issues pertaining to health research data and material transfers. NIMR has improved research monitoring that now it involves district and regional authorities. Copies of certificates of cleared research proposals are sent to respective District and Regional Medical Officers where research is intended to be carried out.

1.5. Tanzania National Health Research Forum

The TANHER Forum is a non-political, non-religious, voluntary body corporate of partner institutions in health research. Its functions are based on the Essential National Health Research strategy that ensures that evidence-based information is utilized correctly in the policy and decision making process. The Forum is a consultative and advisory body to policy and decision makers as regards health research coordination, undertaking, collaboration, dissemination and decision making. It was officially launched by the Minister for Health in February 26, 1999 with the aim to perform the following core functions:

1) To promote and support health research in Tanzania;
2) to identify, update and promote essential national health research priorities;
3) to develop and update guidelines for the conduct of scientifically and ethically sound health research in Tanzania;
4) to promote and enhance the use of health research results for planning policy and decision-making utilization of research findings for policy making;
5) to initiate and maintain consultation with development partners and other external stakeholders for the purpose of furthering the objectives of the Forum;
6) to facilitate and coordinate the strategic dissemination of health research results;
7) to promote capacity building for enhanced quality of health research and utilization of results to inform relevant national and institutional policies;
8) to assist member institutions with the mobilization of resources for health research;
9) to coordinate and promote institutional collaboration for an effective and efficient use of health research resources and to oversee/monitor health research processes and ethics.

Members of the Tanzania National Health Research Forum are:

(i) National Institute for Medical Research
(ii) Catholic University of Health and Allied Sciences
(iii) Tanzania National Commission for Science and Technology Muhimbili
(iv) University of Health and Allied Sciences
(v) University of Dar es Salaam
(vi) Tanzania Food and Nutrition Centre
(vii) Hubert Kairuki Memorial University

(viii) Ifakara Health Institute
(ix) Christian Social Services Commission
(x) Tropical Pesticide Research Institute
(xi) Sokoine University of Agriculture
(xii) Bugando Medical Centre
(xiii) Independent Television
(xiv) Kilimanjaro Christian Medical University College
(xv) Muslim Council of Tanzania
(xvi) Uzazi na Malezi Bora Tanzania
(xvii) Mbeya Referral Hospital
(xviii) Pemba Public Health Laboratory, Zanzibar.

CHAPTER 2

HEALTH RESEARCH PRIORITY SETTING IN TANZANIA

2.1. Background

Health research priorities refer to diseases, conditions and risk factors that produce a significant burden of disease but lack an effective intervention for their control (Bobadilla, 1996; Bobadilla et al., 1994). Health research priorities also include the investigation of ways of improving the overall effectiveness of health systems. On the other hand, health-care priorities refer to the selection of health services that will be provided first in order to improve health benefits and the distribution of health resources. The health priorities of a country and the health research priorities are linked and overlap to some extent. Setting priorities for health research is essential to maximize utilisation of the meagre resources allocated to health sector particularly in resource-poor countries. It is regarded as a key factor in an effort to strengthen national health research systems. Since both public and private investments in research are constrained by limited resources, it is very important to identify high priority areas in which to invest those resources.

In general, planning can be considered a rational response to scarcity and priority setting an integral part of planning. Unfortunately, there is limited literature about the theory of prioritising health research. In the health arena it has been recognised that priority setting is often not given sufficient attention (Green, 1972). Moreover, the important issue is not whether to prioritise, but *how* to prioritise (Mooney *et al.,* 1997). This assertion is made in the context of health care prioritisation and it is applied equally well to health research prioritisation. Prioritisation is an expensive process in terms of time and money and is an ongoing process.

The need to set health research priorities can be traced back to the Commission on Health Research for Development (COHRED) which showed the imbalance in health research spending, with only 10% of the investment being directed towards the problems which cause 90% of the burden of disease in poor countries (GFHR, 2002; COHRED, 2006). On the other hand, the history of national health research priority (NHRP) setting in Tanzania goes back to 1992 when the first list of priorities was developed. However, that list was never approved and endorsed as national priorities mainly because the participation was not broad based (Montorzi et al., 2009). Thereafter, three more priority setting exercises have been carried out in Tanzania. The second and third priority setting exercises were held in 1999 and 2005 respectively.

Various model approaches for setting health research priorities have been advocated by a number of organizations including COHRED (2006) and World Health Organization. All of these approaches share in common the fact that: (i) research must be *demand-driven;* (ii) priority should depend upon the *magnitude* of the problems; (iii) the research priorities should be ethically, socially and politically *acceptable;* (iv) that it must be *feasible* to undertake the research so selected; and (iv) new research must complement existing knowledge and avoid *duplication*. All in all, priority setting exercise must be seen to generate results that people feel are *legitimate* and *fair* and which are *relevant* to practitioners (Daniels & Sabin, 2002). In recent years, '*Accountability for Reasonableness*' (*AFR*) has emerged as the leading framework for priority setting in health care institutions (Daniels & Sabin, 2002). It is the only approach that is considered as empirically based, ethically justified, and focused on process (Martin & Singer, 2003). The framework can be used to guide deliberations in priority setting process and reaching agreement on what decisions should be made (Daniels, 2000; Martin et al., 2002; Gibson et al.,

2005). The framework operates with the so-called four 'conditions'; namely '*Relevance*', '*Publicity*', '*Appeals*' and '*Enforcement*' The AFR approach seeks to enhance priority setting processes that people find legitimate and fair, hence the relevant parties need to be involved (Daniel & Sabin, 2002).

2.2. History of Health Research Priority Setting in Tanzania

In Tanzania, the health research priority setting process is lead by the National Institute for Medical Research through the Tanzania National Health Research Forum. The first Tanzania health research priority setting exercise was held in 1992 with the aim to outline the country's main health research priorities. One of the deficiencies of this exercise was that the participation was not broad based, focusing mainly on health research institutions and allied health academic institutions. There was little or no involvement of the community and/or the private sector.

The second priority setting exercise was held in 1999 bringing together 40 members from government institutions, research institutions, district health management teams, academia, faith based and nongovernmental organizations, media and traditional healers. The third priority setting exercise was held in 2005, and developed through an intensive and iterative process that involved a broad range of key stakeholders in health research in Tanzania. The process involved consultations with a number of stakeholders including district and regional health managers, national Ministry of Health, non-governmental organizations, faith-based organizations, international partners and donors. Despite the involvement of a wide range of stakeholders, the three priority settings did not consider engagement of marginalised and vulnerable groups.

Due to transformation of the health care delivery system and disease dynamics and the need to address the pressing health and development challenges in the country, it is imperative that health research priorities be determined for Tanzania in both short and long term. Thus, there is need to revise health research priorities from time to time.

Priority setting is a long process taking time, and other resources to accomplish. Most often, the process in Tanzania involves documentary review, research, consultation and workshop of technical groups and stakeholders to identify major health challenges and gaps in research (NIMR, 2006). Despite the fact that the exercise is resource demanding, the national priorities in health research change over time as a result of emergence of new health problems. For instance, in recent years we have witnessed an increase of non-communicable diseases, emergence of Lujo virus, Avian Influenza, Dengue Fever and the emergence of resistance strains of microorganisms including malaria parasites, *Mycobacterium* and *Staphylococcus* species, as well as resistance to anti-retroviral drugs. Moreover, interventions in disease management and prevention are changing over time.

It is expected that the product of priority setting exercises would provide a direction to researchers, policymakers and other stakeholders to effectively identify research areas that are likely to make an impact on improving public health outcome. Additionally, prioritization mechanisms are necessary to facilitate the current demand for increased harmonization of health research at regional and global levels to realize the Millennium Development Goals.

The process of setting the 4th National Health Research Priorities started in 2009 through a number of studies and evaluation of the third research priorities (Table 2.1). In this report, description of the studies on health research priorities and their findings is provided.

The need for prioritization of research areas has been emphasized by the National Research and Development Policy (MoCST, 2010). The policy states "Ineffective mechanism for setting up priority research areas that have direct benefits to national economic growth, societal and human welfare". Through this policy, the government has established a mechanism to be used to identify and set up priorities, and put in place implementation strategies of the National Research and Development Agenda. The mechanism is envisaged to ensure efficiency and effectiveness of R&D and provide for a system of reconnaissance, fore-sighting, planning, implementation, monitoring and evaluation within the national R&D institutional and regulatory framework.

Table 2.1: National Health Research Priorities, 2006-2011

	BIOMEDICAL RESEARCH		**HEALTH SYSTEMS RESEARCH**
High	Communicable Diseases, Major	High	Human Resources for Health
	Communicable Diseases, "Neglected"		Reproductive and Child Health
	Maternal and Child Health		Health Service Delivery
Medium	Disease Control		HIV/AIDS
	Non-Communicable Diseases		Health Financing
	Nutrition	Medium	Drugs and Medical Supplies
	Basic Research		Health Information
Lower	Environmental Health		Health Policy
	Product Development		Essential Health Interventions Packages
	Gender		Decentralisation
	Traditional and Alternative Medicine	Lower	Inter-Sectoral Collaboration
	Occupational Health		Public Private Partnership
			International Funding Initiatives
HEALTH DETERMINANTS, SOCIO-CULTURAL, HEALTH RELATED BEHAVIOUR			

According to the National Research and Development Policy (MoCST, 2010) the government of Tanzania, in collaboration with other stakeholders shall:

i. Establish mechanism for setting up short, medium and long-term strategic research priorities in line with the national development agenda;
ii. Ensure that priority setting is inclusive and based on the societal needs; and
iii. Support and fund research activities that enhance societal and human well-being as well as those which are of national importance.

CHAPTER 3

IMPLEMENTATION OF THE NATIONAL HEALTH RESEARCH PRIORITIES, 2006-2011

3.1. Introduction

Setting priorities for health research is essential to maximize utilisation of the meagre resources allocated to health sector particularly in resource-poor countries. Health research prioritization is regarded as a key factor in an effort to strengthen national health research systems. It is expected that the product of priority setting exercises would provide a direction to researchers, policymakers and other stakeholders to effectively identify research areas that are likely to make an impact and lead to improved public health outcome. Additionally, prioritization mechanisms are necessary to meet the current demand for increased harmonization of health research at a global level to realize the Millennium Development Goals (MDGs), related to health i.e. MDG number 4, 5, and 6. Since both public and private investments in research is constrained by limited resources, it is very important to identify high priority areas into which to invest.

The main objective of the review exercise was to assess Institutional health research agendas, strategic plans and publications during the period 2005/06 – 2010/11 in relation to the NHRPs. Specifically, to:

1) Review the Institutional Research Agenda/Priority List (2006-2011) and list health and health research related institutions in Tanzania; identify research agenda/activities for each research institution; identify research subject areas addressed based on national health research priorities for each institution and review studies addressing health and health research priorities
2) Review National, Regional and Global Documents (2006-2011) to assess their alignment with the national health research priorities;
3) Identify new health and health research needs
4) Carry out a synthesis of the review (Objectives 1,2 and 3) and identify factors influencing research agenda; identify source of funding and identify gaps and challenges faced in implementing the national health research priorities
5) Make recommendations on the best way to use in the development of the new national health research priorities

3.2. Methods

Introductory letters were sent to identified health and health-related institutions seeking information as regards to institutional research agenda, strategic plans, annual reports and a list of publications covering the period of 2006-2011. This was followed by a workshop of the Technical Working Group (TWG) held in Tanga from February 21-26, 2011. The TWG set out the objectives outlining the scope of work to be done. Thereafter sources of information were identified and responsibilities were assigned as per objectives to the investigators.

Source documents included number of hard copies of annual reports, strategic plan and any other relevant documents where research information on health from various institutions could be obtained. In case of unavailable hard copy of the documents from the selected institutions paper-based and electronic literature search was employed. Whenever possible, phone contacts were made to institutions where information from the above outlined sources could not be obtained. Research activities/outputs of the NHRPs 2006 – 2011 were categorized into three main areas based on the NHRPs thematic areas namely, Biomedical research (BMR), Health Systems

research (HSR) and Social determinants of health (SDH). The review further assessed whether the strategic plans, research activities done and publications were aligned with the NHRPs. The alignment of the research activities conducted and the publications done per institution were assessed based on the three areas of the NHRPs.

3.3. Approved health research proposals: 2006- 2010

A total of 669 research proposals were registered and approved by the National Health Research Ethics Committee of Medical Research Coordinating Committee (MRCC). Of these 55.8% (N=373), 31.2% (N=209), and 13.0% (87) were biomedical (BMR), health systems (HSR) and socio-cultural (SCR) researches, respectively (Figure 3.1). Documentation of the research proposals received and approved by the MRCC was poor. Although dates of approval were provided, it was difficult to tell whether the proposals were implemented or not. Several proposals were double registered – such that even amended proposals appeared as newly registered ones.

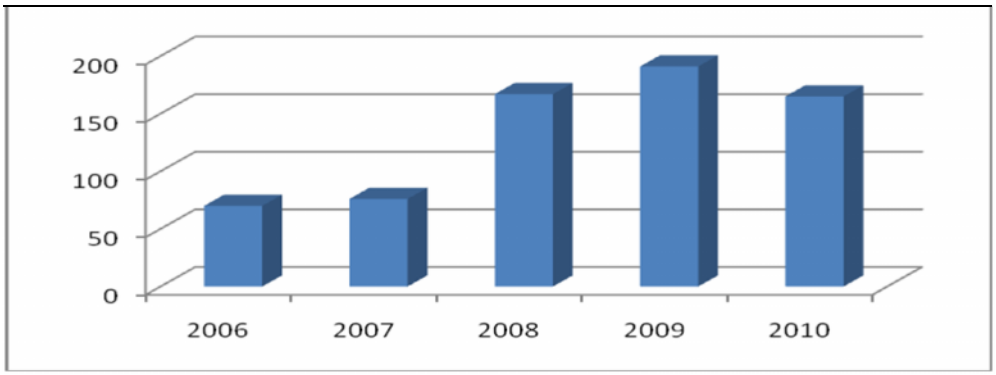

Figure 3.1: Number of approved research proposals, 2006-2010

3.4. Institutional Implementation of the National Health Research Priorities

A number of research institutions responded positively in providing the requested information. The documents received were either electronic or hard copies. During the review exercise a number of gaps and challenges were identified. It was difficult to search for documents/information from identified institutions. Not all identified institutions had web-based data. Unfortunately, even those with websites, the available information was limited and outdated. Though some of the institutions provided needed documents, the documents were not complete; some of the reports for some years could not be obtained. Some institutions had very limited information, indicating that only a few of the implemented activities were recorded. A total of 24 research institutions were identified, however, information was available for 16 research institutions (Table 3.1).

Table 3.1: Alignment of Institutional Strategic Plans to the National Health Research Priorities (NHRP)

Institution	Period	Alignment to NHRP		
		BMR	HSR	SC
National Institute for Medical Research	2008 – 2013	Yes	Yes	Yes
Muhimbili University of Health and Allied Health Sciences	2008 – 2014	Yes	Yes	No
Weil's Bugando University College of Health and Allied Sciences	2006 – 2011	Yes	Yes	No
Tropical Pesticides Research Institute	2006 – 2011	Yes	No	No
Kilimanjaro Christian Medical Centre / Kilimanjaro	2006 – 2008	Yes	Yes	No

Clinical Research Institute				
Ifakara Heath Institute	2008 – 2013	Yes	Yes	Yes
Sokoine University of Agriculture	2005-2010	Yes	No	Yes
Tanzania Food and Nutritional Centre	2006 - 2010	Yes	No	Yes
Muhimbili National Hospital	2007 – 2012	Yes	No	No
African Medical Research Foundation	2006 - 2011	Yes	-	-
Ocean Road Cancer Institute	2010	Yes	No	No
Economic and Social Research Foundation	2008 -2011	No	Yes	Yes
Research on Poverty Alleviation	2010-2014	No	Yes	Yes
Tanzania Wild life Research Institute	2006 – 2011	Yes	No	Yes
Tanzania Forestry Research Institute	2008 – 2014	Yes	No	No

Key: BMR=Biomedical research, HSR = Health System Research and SC = Socio-Cultural determinants of Health.

Strategic plans of NIMR (2008-2013) and Ifakara Health Institute (2008-2013) addressed all the three thematic areas of NHRP (Table 3.1). Strategic plans of Muhimbili University of Health and Allied Sciences (MUHAS), Weil's Bugando University College of Health Sciences (BUCHS) and Kilimanjaro Christian Medical Centre, addressed two categories of NHRP namely; biomedical and health systems research. The Tanzania Food and Nutrition Centre (TFNC) and Tanzania Wildlife Research Institute addressed biomedical and socio-cultural research thematic areas. Tropical Pesticide Research Institute, Ocean Road Cancer Institute and Tanzania Forest Research Institute addressed biomedical research only. Research on Poverty Alleviation and Economic and Social Research Foundation addressed health systems and social determinants of health.

Interestingly, the SUA Research Agenda (2006-2010) covered a good number of areas of public health importance were identified (SUA, 2006; 2010): (a) Epidemiology and control of endemic and emerging diseases of animal that are of economic and public health importance (e.g. rabies, tuberculosis and worms); (b) Development of pharmaceuticals and biological products for prevention, control and treatment of diseases for sustainable animal health and economic welfare; (c) Prospecting for and promotion of indigenous ethnoveterinary and phytomedicine practices; (d) Pollution prevention; (e) Animal and human disease reservoirs and vectors; (f) Food security and demographic surveillance; (g) HIV/AIDS; and (h) Gender and development.

Despite the coordination role of NIMR in setting national health research priorities, it had no institutional research agenda of its own. The NIMR research focus according to its strategic plan (NIMR, 2008) was identified to include research on: (i) major communicable diseases; (ii) major non communicable diseases; (iii) maternal, neonatal and child health; (iv) neglected tropical diseases; (v) health policy and systems research; (vi) ecosystems and environmental health; (vii) traditional and alternative medicine; (viii) health informatics and information systems; (ix) socio-cultural and determinant of health; (x) nutrition; (xi) occupational health; and (xii) new areas. The NIMR Strategic Plan III covered most of the national health research priorities (NIMR, 2006; 2008) (Figure 3.2).

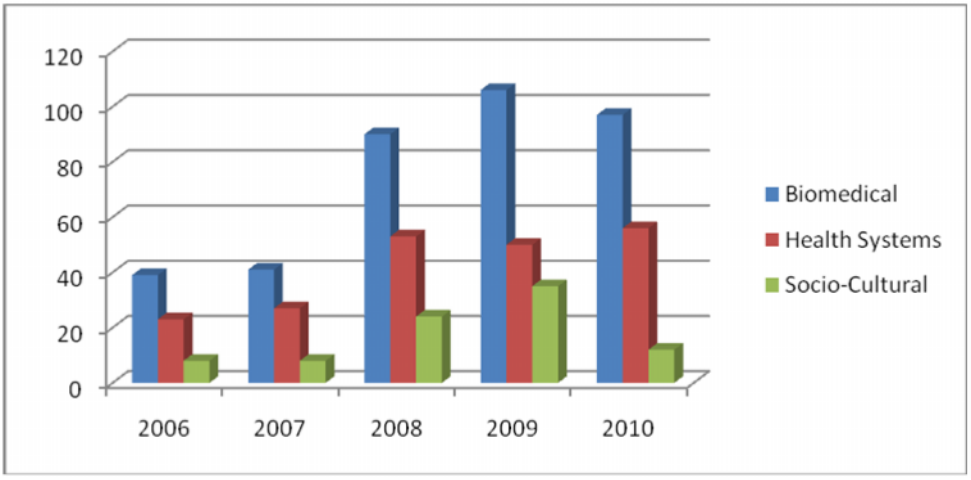

Figure 3.2: Trend of implemented health research projects by thematic areas, 2006-2010

3.5. Publications by Institutions

From 2006 to 2010 a total of 161 researches were carried out by NIMR and about three quarters (73.3%; N=118) were on biomedical thematic area. Health systems and socio-cultural researches accounted for 18.6% (N=30) and 8.1% (N=13), respectively (Table 3.2). It is worth noting that research on other areas not in the priority list was also implemented for the same period especially by MUHAS where 28 of implemented activities were identified.

Table 3.2: Number of research projects and publication in alignment with the NHRPs, 2006-2011

Institution		BMR	HS	SDH	Others	Total
NIMR	Research project	118	30	13	4	161
	Publications	135	68	33	0	236
MUHAS	Research project	91	53	20	28	192
	Publications	251	82	81	0	414
BUCHS	Research project	42	7	3	1	53
	Publications	NA	NA	NA	NA	NA
TFNC	Research projects	14	0	5	0	19
	Publications	NA	NA	NA	NA	NA

Overall, total number of publications in the years 2006 to 2010 in the category of biomedical research was higher than those on health systems and social cultural determinants (Figure 3). Out of 236 publications from NIMR during this time, 135 were on biomedical, 68 were health systems while 33 were on social cultural researches. A similar trend was observed in Muhimbili University of Health and Allied Sciences (MUHAS) (251, 82, and 81), and Bugando University College of Health Sciences (BUCHS) (42, 7, 3).

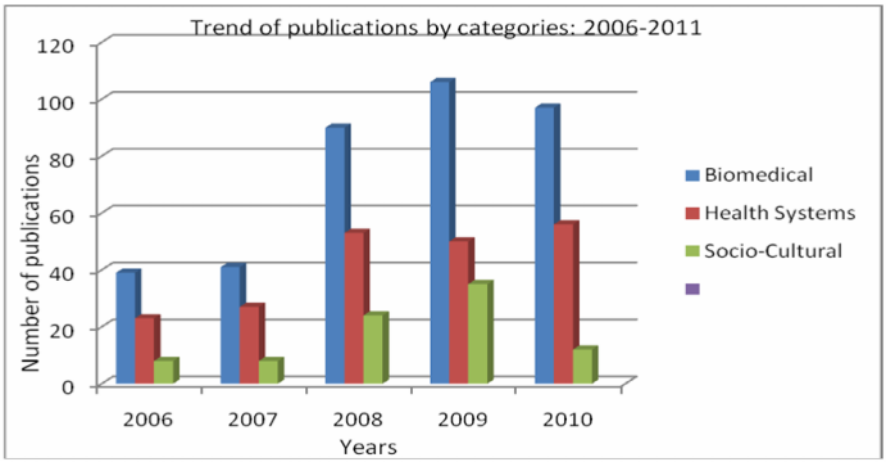

Figure 3.3: Trends of publication by thematic themes, 2006-2010

Using NIMR as a specific case study, further analysis of journal publications indicate that over a period of 30 years, majority of the publication fall under biomedical research. Malaria accounting for 41% of all publications while health systems accounting for only 12% (Table 3.3).

Table 3.3: Publications by the National Institute for Medical Research by subject, 1980-2010

Subject	No. publication	%Publication
Malaria	273	41.1
Health Systems	80	12.1
Lymphatic filariasis	62	9.3
Tuberculosis	39	5.9
HIV/AIDS	59	8.9
Tuberculosis/HIV	6	0.9
Soil transmitted infections/Schistosomiasis	24	3.6
Reproductive Health	17	2.6
Human African Trypanosomiasis	16	2.4
Onchocerciasis	17	2.6
Malaria/Lymphatic filariasis	10	1.5
Others	61	9.2
Total	664	100

Source: Mboera (2010)

National and International documents searched included, National Strategy for Growth and Reduction of Poverty I and II, Tanzania Joint Annual Health Sector Review (2009), Primary Health Services Development Programme (PHSDP 2007-2017) and Millennium Development Goals (MDGs). Six global/international initiatives were also reviewed. The majority were addressing Health Systems Research. Some documents were specifically addressing major communicable diseases which were of highest priority in Tanzania. The reviewed regional and global initiatives included:

i. Algiers declaration (30/6/ 2008)
ii. WHO-TDR's First Global Symposium on Health Systems Research (16-19 November 2010)
iii. UN Millennium Development Goals (September 2000) (MDG4, 5, 6)
iv. Malaria Eradication Research Agenda (MalERA)
v. Kampala Declaration 2008 (Global Forum on Human Recourses for health)
vi. Barcelona Centre for international health Research Agenda

It was found that the implementation of national health research priority aligned well with national, regional and global initiatives and goals. Most of the goals (Table 4) were in line with the current national research priorities (2006-2011) and formed the basis for developing the fourth national health research priority areas.

Table 3.4: Implementation of NHRP in relation to national, regional and global initiatives and goals

National, Regional, Global Initiative	Addressed and implemented in the current NHRP	Remarks
National Strategy for Growth and Poverty Reduction II	Maternal and child health HIV/AIDS	Aligned to biomedical and health systems of NHRPs
Primary Health Service Development Programme	Human resource for health Maternal and Child Health Malaria HIV/AIDS Tuberculosis	Aligned to health systems of NHRPs
Health Sector Strategic Plan III	Quality of care Neglected tropical diseases Non communicable diseases Health promotion Epidemics and disasters	Aligned to biomedical and health systems of NHRPs
Millennium Development Goals	Major communicable diseases (AIDS, Tuberculosis, Malaria) Maternal and neonatal diseases	Aligned to biomedical and health systems of NHRPs
Algiers's Declaration	Health Systems Research	Aligned to health systems of NHRPs

3.6. Community priorities on health and health research in Tanzania

Current knowledge base from the available literature in Tanzania (at least between 2006 and 2010) does not provide, in any detail, a comprehensive list of health priorities or national health research priorities drawn from community members predominantly through the use of participatory methodologies. So far, few attempts have been made to address this planning gap but they mainly generated evidence from few district case-studies. For example Makundi *et al.* (2007) provided evidence on community priorities of health interventions by using a modified nominal group technique which is, by its very essence, participatory. Through this technique, they have managed to come up with a list of priority health interventions as were ranked by community members, health workers and district planners in Kilimanjaro and Dar es Salaam regions of Tanzania. There has however been a series of knowledge, attitude, and practice surveys which attempted to prioritise health problems in Tanzania.

3.7. Discussion

The main objective of this review was to assess the alignment of health research undertaken in Tanzania and compare with the national health research priorities. It was noted that majority of the research activities conducted by the identified institutions were mainly biomedical and the least activities are those on socio-cultural determinants of health. A similar trend has been reported in a recent study by Mboera (2010). The reasons for this trend could not be determined. However, it was likely to be associated with the funding preferences. The inclining of research

institutions to major on biomedical research is historical. For instance, it has been documented that, right from establishment, NIMR's focus has been on research towards communicable diseases, mainly parasitic diseases like malaria, schistosomiasis, onchocerciasis, sleeping sickness, lymphatic filariasis, intestinal helminths and tuberculosis (Mboera, 2010). Moreover, with little funding from the Government (Magesa et al., 2011), it is likely that to some proportion, research areas implemented were not towards addressing national health research priorities.

In terms of community priority setting experiences, the study by Makundi *et al.* (2007) has set an important milestone in priority setting especially by involving community members to rank health priorities in their local contexts. Impliedly, community health priorities might as well reflect their health research priorities. However, similar and much more comprehensive exercises are needed to independently come up with health research priorities drawn from community members through broad-based community participatory methodologies.

Apathy by community members to participate in health planning or health research priority setting could be caused by a number of reasons. In their two-district study (Lushoto and Muheza), Mubyazi *et al.* (2007) reported that community participation in health planning is low because community members feel that their priorities are mostly ignored by technocrats at district levels. In a similar vein Maluka *et al.* (2010) have shown that although Tanzania is implementing health sector decentralisation reforms with its main component of enhancing community participation, district level priority setting 'is not nearly participatory' as it should be according to prescriptions by policy and guidelines. They have further indicated that once health sector decisions have been made there are neither any formal mechanisms for community members to challenge them nor an adequate enforcement mechanisms to ensure fairness and legitimacy of the decisions so made.

A recent study in Tanzania has indicated that health financing and human resources for health, integrated healthcare (Briggs & Garner, 2001), multi-sectoral approach to interventions and HIV and food insecurity should be considered as the most important priorities in policy formulation (Mboera et al., 2009). This provides some of the crucial issues that need to be addressed while developing new health research priorities. Strong evidence about what works most effectively in the Tanzanian context where there are multiple disease burdens and limited resources is often lacking. This means, there is a general need for increased investment in health system research, monitoring and evaluation of the interventions. In order to maximise the current investments in health and encourage additional investments, more attention needs to be paid to filling the knowledge implementation gap so that policymakers have the tools available to make evidence-based decisions.

Most of the national and global initiatives in addressing health priority do not emphasise the support of research. This is considered to be an oversight that needs to be urgently addressed. There is a need to make research as one of the compulsory components in all programmes so as to have evidence based information in their endeavour to implement their respective programmes. This means, research should be part and parcel of all national programmes. Research findings especially are vital in monitoring and evaluation of the implementation of national programmes.

This work faced a number of challenges including the limited availability of information from institutional websites. Some websites were not up-dated and thus not functioning. Investment in health information systems is needed to document research activities undertaken so as to monitor and evaluate activities for national strategic planning and priority setting. Availability and

use of quality information is crucial in coordination of health research activities to avoid duplication and ensure effective and efficient use of resources.

CHAPTER 4

DISEASE BURDEN IN TANZANIA

A review of the Health Management Information System data on diseases and conditions was carried out to cover three years, 2009-2011. The analysis included both out morbidity and mortality data (Tables 4.1 -4.6).

Table 4.1: Top ten outpatient diagnoses (%) among under-fives in Tanzania, 2009 – 2011

2009		2010		2011	
Disease	**%**	**Disease**	**%**	**Disease**	**%**
Malaria	38.2	Malaria	34.8	Malaria	33.0
Acute respiratory infection (ARI)	17.4	ARI	17.4	ARI	18.5
Pneumonia	7.3	Pneumonia	9	Pneumonia	9.5
Diarrhoea	6.9	Diarrhoea	8	Diarrhoea	9.2
Intestinal worms	4.7	Intestinal worms	3.7	Intestinal worms	4.8
Skin Diseases	2.9	UTI	3.4	UTI	3.2
Eye diseases	2.9	Skin Infection	3	Skin Infections	3
Urinary tract infection (UTI)	2.4	Eye Infection	2.4	Eye Infections	2.6
Anaemia	1.6	Anaemia	1.6	Ill-defined illness	2
Ill-defined illness	1.6	Ill defined illness	1.3	Anaemia	1.7

Source: HMIS data for Mainland Tanzania, 2009, 2010, 2011

Malaria and acute respiratory infection (ARI) were the leading outpatient diagnoses, among under-fives, accounting for over half of the outpatient attendances. A declining trend in malaria cases is observed over the three year period, with a drop by 8% between 2009 and 2010, and by over 25% from 2010 to 2011. Other diseases such as ARI, pneumonia and diarrhoea present a stable status.

Table 4.2: Top ten outpatient diagnosis (%) among those ≥5 in Tanzania, 2009 – 2011

Rank	2009			Rank	2010			Rank	2011		
	Diagnosis	**Number**	**%**		**Diagnosis**	**Number**	**%**		**Diagnosis**	**Number**	**%**
1	ARI	2,683,553	14.1	1	Malaria	6,890,882	28.9	1	Malaria	4,508,289	28.3
2	Eye diseases	1,005,564	5.3	2	ARI	2,652,082	11.1	2	ARI	2,361,007	14.8
3	Venereal diseases	939,987	4.9	3	Diarrhoea	1,036,202	4.3	3	Pneumonia	1,087,580	6.8
4	Pneumonia	925,496	4.9	4	Pneumonia	1,030,900	4.3	4	Diarrhoea	771,906	4.8
5	Diarrhoea	889,506	4.7	5	Intestinal worms	861,611	3.6	5	Intestinal worms	730,894	4.6
6	Intestinal worms	857,510	4.5	6	Cardiac diseases	561,040	2.4	6	Ill defined illness	511,713	3.2
7	Skin diseases	641,887	3.4	7	Ill-defined illness	509,352	2.1	7	Urinary tract infection	492,833	3.1
8	HIV/AIDS	613,101	3.2	8	Skin infections	5,076,649	21.3	8	Minor surgical conditions	440,760	2.8
9	Minor surgical conditions	532,975	2.8	9	Eye infections	388,139	1.6	9	Skin infections	440,124	2.8
10	Malaria	6,113,889	32	10	Pelvic inflammatory disease	278,300	1.2	10	Eye infections	328,138	2.1
	Total	**19,008,694**				**23,872,055**				**15,947,547**	

Source: HMIS 2009, 2010, 2011

A similar pattern as for under-fives was observed for ARI, pneumonia and diarrhoeal diseases. However, in this age group, OPD attendances due to malaria increased by 13% from the year 2009 to 2010 and declined by 35% from 2010 to 2011. In 2009, HIV/AIDS ranked number 9 but during 2010 and 2011, it did not feature on the list of top 10 OPD diagnoses among the age group 5 years and above.

Table 4.3: Top ten leading causes of admissions (%) for children aged <5 years, 2009-2011

	2009			2010			2011		
Rank	**Disease**	**No. of cases**	**%**	**Disease**	**No. of cases**	**%**	**Disease**	**No. Of cases**	**%**
1	Malaria	371,998	57.4	Malaria	356,503	48.9	Malaria	275,195	41.2
2	Diarrhoea	68,362	10.6	Pneumonia	102,448	14	Pneumonia	101,239	15.2
3	ARI	47,317	7.3	Diarrhoeal diseases	50,903	7	Diarrhoeal diseases	50,963	7.6
4	Anaemia	46,895	7.2	Anaemia	40,625	5.6	ARI	38,456	5.8
5	Intestinal worms	30,638	4.7	ARI	24,421	3.4	Anaemia	31,670	4.7
6	Prenatal conditions	7,932	1.2	Ear and eye infections	15,145	2.1	Eye infections	14,339	2.2
7	Schistosomiasis	6,790	1.1	UTI	13,093	1.8	UTI	12,291	1.8
8	Malnutrition	6,024	0.9	Ill defined illness	12,684	1.7	Non-infectious kidney diseases	10,262	1.5
9	Ill-defined illness	5,775	0.89	Prenatal conditions	6,315	0.9	Ill defined illness	8,085	1.2
10	Skin diseases	4,489	0.69	Skin Infections	5,532	0.8	Schistosomiasis	8,010	1.2
Total		648,128			730,059			667,722	

Overall, the three leading causes of admission among under-fives were malaria, diarrhoea and respiratory infections, which collectively accounted for more than two-thirds of all causes of admission in the period between 2009 and 2011 (Table 4.3). Malaria was consistently the leading cause of admissions for children aged less than five years, accounting for 57.4%, 48.95 and 41.2% of all admissions in 2009, 2010 and 2011, respectively. In 2011, more incidence of ARI than diarroeal diseases were reported.

Table 4.4: Top ten leading causes of admission (%) for persons aged ≥5 years, 2009-2011

	2009			2010			2011		
Rank	**Disease**	**No. of cases**	**%**	**Disease**	**No. of cases**	**%**	**Disease**	**No. of cases**	**%**
1	Malaria	253,748	33	Malaria	307,865	37.9	Malaria	252,813	32.8
2	Pneumonia	39,207	5.1	Pneumonia	60,317	7.4	Diarrhoea	56,143	7.3
3	Diarrhoea	36,767	4.8	Diarrhoea	53,192	6.6	ARI	48,673	6.3
4	ARI	36,136	4.7	ARI	31,600	3.9	Pneumonia	43,960	5.7
5	Worms	32,731	4.3	UTI	26,249	3.2	Anaemia	25,602	3.3
6	Anaemia	30,458	4	Anaemia	26,123	3.2	UTI	18,460	2.4
7	Heart disorders	21,785	2.8	HIV/AIDS	24,498	3	Ill-defined illnesses	18,370	2.4

8	Rheumatism	19,875	2.6	Skin Infection	16,263	2	HIV/AIDS	14,563	1.9
9	UTI	19,043	2.5	Ill-defined illness	14,021	1.7	Hypertension	12,857	1.7
10	Fracture	18,579	2.4	GDS/ GUD	14,002	1.7	Tuberculosis	12,330	1.6
	Total	16,696			18,129			16,363	

Key: ARI= acute respiratory infection; UTI= urinary tract infection; GDS= genital discharge syndrome; GUD= genital ulcer disease;

The overall three leading causes of admission among persons aged 5 years and above for the period 2009-2011 were malaria, diarrhoea and respiratory infections, which collectively accounted for about half of all admissions. Similarly malaria was the leading cause of admissions for persons aged 5 years and above, accounting for 33.0%, 37.9% and 32.8% of all admissions in 2009, 2010 and 2011, respectively.

Table 4.5: Top ten leading causes of deaths (%) for children aged <5 years, 2009-2011

	2009			2010			2011		
Rank	**Disease**	**No. of Cases**	**%**	**Disease**	**No. of cases**	**%**	**Cause of death**	**No. of Cases**	**%**
1	Malaria	8165	48.9	Malaria	7,215	39.8	Malaria	6,272	36.9
2	Anaemia	2632	15.8	Pneumonia	3077	17	Pneumonia	3013	18.5
3	Diarrhoea	1185	7.1	Anaemia	1892	10.4	Anaemia	1437	8.8
4	Prenatal conditions	844	5.1	Diarrhoea	1197	6.6	Diarrhoea	1090	6.7
5	Malnutrition	591	3.5	Prenatal conditions	923	5.1	Prenatal conditions	620	3.8
6	ARI	528	3.2	Severe PEM and other nutritional disorders	584	3.2	Severe PEM and other nutritional disorders	579	3.5
7	HIV/AIDS	458	2.7	HIV/AIDS	552	3	HIV/AIDS	361	2.2
8	Worms	408	2.4	ARI	289	1.6	ARI	339	2.1
9	Burn	247	1.5	Burns	179	1	Non-infectious gastrointestinal diseases	312	1.9
10	Tuberculosis	131	0.8	Snake and Insect bites	121	0.7	Ill defined illness	189	1.2
	Total deaths	768,061			812,539			770,210	

Key: ARI= acute respiratory infection; PEM = protein energy malnutrition

In 2010 and 2011 the leading causes of deaths for children aged less than five years was malaria followed by pneumonia and anaemia, the three of which accounted for more than two-thirds of all deaths. In 2009, malaria was leading cause of deaths followed by anaemia and diarrhoeal diseases.

Table 4.6: Top ten leading causes of deaths for persons aged ≥5 years, 2009-2011

	2009			2010			2011		
Rank	**Disease**	**No. of cases**	**%**	**Disease**	**No. of cases**	**%**	**Cause of death**	**No. of cases**	**%**
1	Malaria	5688	19.1	Malaria	6,973	31.6	Malaria	5,053	23.5
2	Ill defined illness	3519	11.8	HIV/AIDS	2475	11.2	HIV/AIDS	2235	10.4
3	Poisoning	2232	7.5	Pneumonia	1727	7.8	Anaemia	1357	6.3
4	HIV/AIDS	1826	6.1	Anaemia	1522	6.9	Pneumonia	1357	6.3
5	Leprosy	1795	6	TB	1116	5.1	TB	1018	4.8

6	Heart diseases	1702	5.7	Cardiac failure	1026	4.7	Hypertension	839	3.9
7	Pneumonia	1553	5.2	Diarrhoea	717	3.3	Diarrhoea	834	3.9
8	Anaemia	1324	4.4	Hypertension	443	2	Cardiac Failure	753	3.5
9	TB	1276	4.3	Diabetes mellitus	363	1.6	Neoplasm	589	2.8
10	Rheumatism	615	2.1	UTI	259	1.2	Other cardiovascular diseases	466	2.2
	Total deaths	29,849			22,080			21,452	

In 2010 and 2011, malaria and HIV/AIDS took the first two positions, with anaemia coming third in 2011, while pneumonia took third place in 2010. For the year 2009, the three leading causes of admission were malaria, surprisingly followed by ill-defined disorders and poisoning.

CHAPTER 5

APPROACHES TO SETTING THE FOURTH HEALTH RESEARCH PRIORITIES IN TANZANIA

The setting of the fourth National Health Research Priorities involved a number of studies among different groups including the marginalized and vulnerable populations, community, district and national level stakeholders.

5.1. Health Research Priorities among Marginalized and Vulnerable Groups

The study was carried out in Ilala District in Dar es Salaam and Mbulu District in Manyara Region. Selection of Ilala was due to the fact that National Associations of People living with Albinism and Physically Disabled people are both located. Mbulu district was selected for the reason that two of the identified marginalized groups, namely pastoralists (Barbaigs) and hunters and gatherers (Hadzabe) are found.

The *Barbaigs* belong to a larger group of pastoralists called *Datooga*. The *Barbaig* is the best known and most numerous sub-tribe of the Datooga people, who reside chiefly in the northern volcanic highlands dominated by Mount Hanang (3,418m), whose sacred nature makes it an important theme in *Barbaigs* myth and song. The *Barbaigs* keep goats, sheep, donkeys and a few chickens, but cattle are by far the most important domestic animal. The meat, fat, blood, milk, hide, horns, tendons and cow dung have either practical or ritual purposes. They were formerly nomadic, depending largely on milk products for diet, and moving whenever the needs of their cattle dictated. Now, however, many farm a plot of maize and sometimes beans and millet.

The Barbaigs themselves blend in with their environment, their dress being the colour of the reddish brown soil. Only on closer inspection will they appear colourful with their reddish, patched leather dresses, bead work, and brass bracelets and necklaces. They are a proud people, with a reputation as fierce warriors. They are resistant to cultural change, maintaining a strong adherence to traditional animist beliefs and practices.

The *Hadzabe'e (Hadza people)*, are an ethnic group in north-central Tanzania, living around Lake Eyasi in the central Rift Valley and in the neighbouring Serengeti Plateau. The *Hadzabe'e* number around 1,000-1,500. They live as hunter-gatherers, much as their ancestors have for thousands of years. They are the last full-time hunters and gatherers in Africa. The *Hadzabe'e* traditionally forage for hunting, berry collection and for honey in their areas of residence.

The study employed the Nominal Group Technique (NGT). NGT is one of participatory methods of public engagement and involves four steps namely; simple ranking, discussion, display of results and voting (Makundi et al., 2007). Unlike other participatory techniques such as focus group discussions (FGDs) voting is central in NGT and allows expression of disagreement. NGT has shown usefulness in identifying priorities among health professionals (Redman et al., 1997) and that of lay people and health professionals in Tanzania (Makundi et al., 2007). The use of the nominal group technique in identifying problems and setting priorities in health care has been appreciated (Maclachlan, 1996; Redman et al., 1997; Makundi, 2000; Kapiri et al., 2003; Makundi et al., 2007; Ottersen et al., 2007). Makundi (2000) found the technique easy to apply to a community of lay people, as shown by a study of ranking of health states across sites and informant groups in Tanzania. However, NGT has not been tested in identifying health research priorities involving marginalized groups in Tanzania.

5.2. Capturing community and district voice in health research priority setting

The purpose of this study was to use nominal group technique (NGT) in identifying community and district health research priorities. This study was carried out in 28 districts of Tanzania. Initially, a questionnaire was sent out to all 121 District Medical Officers (DMOs) in Tanzania to provide their respective district health priorities. These districts were Tarime, Iringa, Songea, Muleba, Sumbawanga, Same, Pangani, Lindi Rural, Bariadi, Arumeru, Kilosa, Tarime, Newala, Ngara, Mbulu, Chamwino, Nkasi, Kiteto, Mkuranga, Tandahimba, Tanga City, Lindi Urban, Mbeya City and Kinondoni Municipality.

In addition to the 24 districts, four districts were selected to determine community health research priorities. The sampling process involved two stages. The first stage was stratification of districts according to seven zones of mainland Tanzania. The second stage was random selection of districts according to wealth index of Tanzania Expenditure Survey 2006/07 to categorise the districts into two income status- namely low and middle income earning categories. Thereafter, four districts were selected including two districts from each category. The selected districts from low income index were Rufiji and Lindi Rural and from middle income index were Kongwa and Bahi.

Participants in the NGT were selected purposely in collaboration with key informants in the study areas. A key informant was considered as a member of the study population who offered to inform or educate the researcher on a given subject of investigation (Coreil, 1995; Babbie, 1998). Participants in the community sessions were selected in collaboration with Ward Executive Officers (WEO) who knew well members of their respective communities. These included women group representatives, village leaders, key influential persons, health workers in nearby facilities and religious leaders.

At the district level, group sessions involved Council Chair, Council Head of Social Services, Community Development Officers, District Water Engineer, District Planning Officers, community influential persons, and Council Health Management Team (CHMT) members namely District Medical Officer, District Health Officer and District Health Secretary. Three group sessions were held in each district. One session included district members, while two sessions included two wards (rural and urban). Selection of wards was done in consultation with District Medical Officer. Each group consisted of 8-13 members and took on average 2 hours to complete the discussion.

Using NGT, the group session was divided into four stages. Each respondent identified and ranked disease, service-delivery and social-cultural health research problems individually. This information was analyzed and the ranking presented to the group. The presentation from individual ranking was done in a circle and not in linear form so as to reduce bias. A discussion session was conducted to get the groups' ranking and adjustment of the ranking in an attempt to reach a consensus. In the final step, assuming that full consensus is not achieved, voting was used to elicit majority views and also allowing disagreement to be expressed. In this way, it is believed that the preference of each member of the group was well represented. Voting was done by a secret ballot of which a specific problem receiving the highest number of votes was ranked highest and the process followed a self elimination method until all the identified problems were finished and the results were displayed to the group.

Kiswahili was the language used during NGT sessions because it is well understood in study areas. Participants, who were unable to read and write, were guided by the researchers in the ranking and voting processes. In the course of identifying health problems, health was considered from a

holistic perspective classifying it into three categories namely disease, service and socio-cultural problems. The respondents were asked to rank identified diseases according to severity of the problem. They were asked to give priority to a condition even if its prevalence was low but a condition is considered to have severe consequences.

Initially, individual ranks from each participant were tallied and the final rank for all participants noted. The ranking order was achieved by arranging the mean values in ascending order from 1-10 for disease problems, 1-5 for service-delivery problems and 1-5 for socio-cultural problems. Scores were from 10, 9, 8, ….., 1 to 1st , 2nd, ….., 10th ranks (high score assigned to disease ranking first, low score to disease ranking least) in the reported top ten diseases by districts Health Management Information System (HMIS). The mean value of score for each disease in the selected top-ten was computed. For health service and socio-cultural problems- the scores were 5,4,3,2 and 1. The condition with highest mean value was given highest priority - while a condition scoring lowest mean was given low priority.

5.3. Stakeholders' Health Policy Priorities in Tanzania

A workshop to discuss, identify and agree on priority policy questions in health systems that are likely to come onto the policy agenda in Tanzania - that can be informed through the application of research evidence, was convened in March 2009. The workshop was held in Dar es Salaam. An invitation to a workshop on health policy priorities was extended to Government Ministries, Universities, Research Institutions, Non-Governmental Organizations, and Civil Societies involved in health research and health service delivery. During the workshop, presentations were made on the overview of research policy initiatives and situation analysis of translation from research to policy in the United Republic of Tanzania. In another presentation, findings of assessment on the use of health research on policy and practices in the country were presented. The two presentations were followed by a plenary discussion.

Three working groups were formed; each had at least 11 members. Each group was required to brain-storm, discuss and identify policy priority areas in Tanzania. Following group work discussion, the workshop participants convened for a plenary session where findings from the three groups were presented and discussed.

5.4. Involving National Stakeholders' in Setting Health Research Priorities

5.4.1. Multi-Sectoral Health Research Priority Setting, Bagamoyo, June 2011

A workshop on health research priority setting organized by the Tanzania Commission for Science and Technology, National Institute for Medical Research and Council on Health Research and Development (COHRED) brought together researchers and decision makers from all sectors in Tanzania. Private research institutions and non-governmental organizations were represented. Ranking instructions developed by the COHRED were discussed and adopted for priority setting exercise. Each participant was instructed to give each research area included on the list a score of 1 to 5 (5 being the highest score) for each of the following five criteria:

Criteria 1: Appropriateness - as determined by:

- Ethical and moral issues
- Availability of pre-existing data
- Culturally accepted

Criteria 2: Relevancy

- Equity focus and community concern or demand
- The size of the problem
- Contributes to the national and sectoral objectives

Criteria 3: Feasibility

- Capacity of the system to support the research
- The amount of money available
- Financial and human resources available
- Cultural/political environment

Criteria 4: Impact of Research Outcome

- Chance or opportunity to implement the research
- Use of the research results
- Link of the research to policy decisions
- Overall reduction of the problem, including cost

Criteria 5: Opportunity to Strengthen Collaboration with Partners

- Presence of capable partners
- Availability of partner infrastructure and resources
- Possibility that potential partners will collaborate to undertake the research
- Possibility of greater research outcome with partner involvement

5.4.2. Stakeholders Consultative Workshop in Priority Setting

A 2-day consultative stakeholders' workshop was convened in Dar es Salaam in November 2012, to finalize the setting of the national health research priorities. The exercise was organized by the Tanzania National Health Research Forum and the National Institute for Medical Research. The objective of the workshop was to bring together key stakeholders in health and health research to set and agree on research priorities for the coming five years (2013-2018). Specifically, the workshop objectives were:

- To brief participants on the Health Research Priority Setting needs and approach
- To review the implementation of the National Health Research Priorities of 2006-2011
- To share with participants on priority research areas as identified by other groups
- To set national priorities for health research in Tanzania for the coming five years

The workshop was attended by 44 participants representing the following Institutions:

1) University of Dar es Salaam
2) Ministry of Health and Social Welfare
3) Hubert Kairuki Memorial University
4) Ifakara Health Institute
5) Medical Stores Department
6) Ministry of Livestock and Fisheries Development
7) Mwanza Intervention Trials Unit
8) Mzumbe University
9) National Institute for Medical Research
10) REPOA
11) Tanzania Commission for AIDS
12) Tanzania Commission for Science and Technology
13) Tanzania Fisheries Research Institute
14) Tanzania Food and Drug Authority
15) Tanzania Food and Nutrition Centre
16) Tanzania National Health Research Forum
17) Tanzania Traditional Health Practitioner's Association
18) Vice President's Office, Division of Environment

During the workshop, presentations on the baseline studies on health research priorities conducted in Tanzania between 2009 and 2011 were made. These were followed by presentations

on priorities from the National Health/Disease Control Programmes. Thereafter, a presentation of guiding instructions for individual priority ranking was made and then each participant was asked to generate a list of maximum of 20 research areas. The 20 maximum list of research areas was envisaged to offer a balance between what is feasible to do in a limited time period that any workshop can offer and ultimately the number of priority research areas that can be funded and implemented during the current timeframe.

Criteria for setting priorities were presented and agreed to be *appropriateness, relevancy, feasibility, impact of research outcome*, and *opportunity to strengthen collaboration with partners* (similar to those used during the Multi-Sectoral Workshop – described above).

Each participant was given a chance to list what he/she thinks should be in the priority list for research based on his organizational strategic objectives or expertise. A scoring matrix was provided where each area was supposed to be scored in terms of criteria described above. Each participant was asked to give each research area included on the list a score of 1 to 5 (5 being the highest score) for each of the five criteria. Presentation of individual ranking results was done after the summary had been made. Following that exercise, participants were divided into 3 groups to make a new list of priority areas and score after discussing within the group while referring to their individual list and scores. The three groups were guided by main categories which were Biomedical, Health System, Socio-cultural determinants and Climate change.

CHAPTER 6

NATIONAL HEALTH RESEARCH PRIORITIES FOR 2013-2018

6.1. Marginalized and vulnerable groups in Mbulu and Ilala Districts

The findings of this study are divided into three areas: disease problems; services problems and social-cultural problems of the marginalised groups.

6.1.1. Overall pattern of priority disease problems: Respondents in Mbulu and Ilala identified a total of 33 priority disease problems needing health research attentions (Table 6.1). Frequently mentioned disease problems included malaria (21%), HIV/AIDS (18%), diabetes (18%), tuberculosis (18%), eye problems (15%), sexually transmitted diseases (12%), rheumatism (12%), cancer (12%), diarrhoea (9%), asthma (9%), intestinal worms (9%), typhoid fever (9%), blood pressure (9%), pneumonia (6%), complicated labour (6%), stomach ulcers (6%), sleeping sickness (6%), relapsing fever (6%) and paralysis (6%) (Table 6.1).

Table 6.1: Summary of disease problems of marginalised groups in Mbulu District

Rank	Men-Hadzabe (N= 12)	Women Hadzabe (N=12)	Men-Barbaigs (N= 8)	Women – Barbaigs (N= 8)	Physically Disabled (N= 13)	Vulnerable Women- (N= 12)	Elderly-Mbulu (N= 13)
1	Malaria	Obstructed labour	Malaria	Obstructed labour	Malaria	HIV/AIDS	Diabetes
2	Diarrhoea	Diarrhoea	Tuberculosis	HIV/AIDS	Diabetes	Typhoid	Blood Pressure
3	Relapsing fever	Tuberculosis	Brucellosis	Diabetes	HIV/AIDS	Malaria	Joint pain
4	Meningitis	Eye problems	Pneumonia	STDs	Asthma	Diabetes	Cancer
5	Dental problems	Measles	Diarrhoea	Pneumonia	Paralysis	STDs	Typhoid
6	Tuberculosis	Malaria	HIV/AIDS	Schistosomiasis	Joint pain	Joint pain	Urine retention
7	Sleeping sickness	Relapsing fever	Eye problems	Malaria	Typhoid	Eye problems	Peptic Ulcers
8	Eye problems	Sleeping sickness	Intestinal worms	Tuberculosis	Tuberculosis	Asthma	Tuberculosis
9	Intestinal Worms	Ear problems		Asthma	Eye problems		Worms
10	STDs	Joint pain		Jaundice			

Key: STD= sexually transmitted diseases

6.1.2. Priority disease problems: Overall, malaria was identified as a first priority disease by groups of Hadzabe and Disabled persons in Mbulu district. Complicated labour ranked first by Hadzabe and Barbaig women. HIV/AIDS was ranked as first priority problem by vulnerable women in Mbulu district and physically disabled group in Ilala district Diabetes was ranked as a disease of first priority by the elderly whereas skin cancer was ranked as the disease of greatest concern by albinos (Table 6.1 and 6.2).

Table 6.2: Summary of disease problems of marginalised groups in Ilala

Physically disabled (N= 12)	People with Albinism (N= 10)
HIV/AIDS	Skin cancer
Malaria	Impaired vision
Cancer of joints	Cervical cancer
Diabetes	Initial skin lesions
Fistula	HIV/AIDS
Peptic ulcers	Sexually transmitted diseases
Blood pressure	Diabetes
Paralysis	Blood pressure
Hydrocoele	
Malnutrition	

Specific diseases unique to particular health needs of a certain marginalized group emerged in the ranking. Hadzabe and Barbaig women identified complicated labour as a unique problem to their group. Unique problems of the elderly were identified as diabetes, blood pressure, cancer, paralysis and urinary retention in men. People living with disability identified paralysis and cancer leading to disability as unique disease problems. People with albinism identified skin cancer, low vision and skin ulcers as the group's unique disease problems. Overall, specific diseases occurring uniquely to particular health needs of a certain marginalized group were identified as unique research priorities of the marginalized groups.

Table 6.3: Health service problems of marginalised groups in Mbulu District

Rank	Hadzabe men (N= 12)	Hadzabe women (N=12)	Barbaig men (N= 8)	Barbaig Women (N= 8)	Physically Disabled (N= 13)	Vulnerable Women (N= 12)	Elderly persons (N= 13)
1	Shortage of safe water	Shortage of clean and safe water	Shortage of clean and safe water	Shortage of medicines	Lack/limited recognition as a special group	Long distances to referral facilities	Shortage of medicines
2	Lack of dispensary	Shortage of medicines	Lack of diagnostic services	Transport problems	Lack of friendly and special health services for disabled	Lack of services during night times and weekends	Poor implementation of the exemption system
3	Shortage of medicines	Lack of health education	Shortage of trained midwives	Shortage of clean and safe water	Stigma and discrimination against disabled	Poor implementation of exemption scheme for pregnant mothers	Shortage of qualified health workers
4	Long distance to health facilities	Lack of dispensary	Inadequate health education	Lack of diagnostic services	Poor implementation of the exemption system	Shortage of qualified health workers	Long waiting time to get health services
5	Transport problems	Long waiting and service times	Shortage of medicines		Lack of sufficient resources prioritised for disabled		Poor provider-patient relationships

6.1.3. Health service problems: Overall, issues related to inadequate health service infrastructures, shortage of health workers and drugs were identified as research priorities by almost all groups, but with differing ranking order (Table 6.3). Specifically, marginalized groups such as the

Hadzabe and Barbaigs identified more or less similar health research priorities some of them with similar ranking order. For example shortage of clean and safe water was ranked as a first priority by these two ethnic groups. Probably this might explain why diarrhoeal diseases were prioritized by both groups - with each group assigning a different rank.
Like all other marginalized groups, people living with albinisms prioritized medicines and shortage of health workers as important research priorities for addressing their specific health care needs. However, emphasis was on how research could address the problem of shortage of health personnel with expertise in special albino health care needs. In addition, shortage of special medicines to treat albinos' skin and general health conditions was raised as an area of concern needing research.

Physically disabled people, people living with albinism and 'vulnerable' women had a special concern related to inadequate implementation of the existing exemption policies. While physically disabled people and albinos were concerned about the failure of the exemption system to consider them as special groups and thus address their health care needs. Vulnerable women prioritized ineffective implementation of the existing exemption systems as they were required to pay for some services especially during delivery. It is these reasons that justified their decision to prioritise poor implementation of the exemption policy as an area needing research. Stigma and discrimination were also prioritized by people living with albinism and physically disabled people as areas that need research in order to inform policies and interventions. When asked why they thought this was an important research area, participants in the discussions indicated that it is a factor which act as a barrier to many people in these groups or their care takers to seek appropriate health care and thus affecting their general health conditions. Health education was also considered by majority of the groups as a priority needing research.

Table 6.4: Social-cultural problems of marginalised groups in Mbulu

Rank	Hadzabe men (N= 12)	Hadzabe women (N=12)	Barbaig men (N= 8)	Barbaig women (N= 8)	Physically disabled (N= 13)	Vulnerable Women (N= 12)
1	Meat eating taboos	Egg eating taboo	Polygamy	Low levels of women participation in decision making	Humans sharing same houses with animals	Female genital mutilation (FGM)
2	Fruit eating taboos	Polygamy	Traditional dances	Polygamy	Cigarette smoking	Beliefs in witchcraft
3		FGM using same tools	Nomadic life style	Traditional dances	Drunkenness	Culture of delivering at home
4		Meat eating taboos	Low levels of (health) education		Negative traditional beliefs	Widow inheritance
5					FGM using unsterilized tools	Traditional dances at night

6.1.4. Socio-cultural problems: Identified socio-cultural priorities varied according to specific nature and needs of each group. Meat and egg eating taboos were identified as priority areas by hunters and gatherers (Hadzabe) including both men and women (Table 6.4). Female Genital Mutilation (FGM) was equally considered important and identified as priority research areas from women in Mbulu district and for the physically disabled people in Ilala district. Polygamy practice was identified as a priority area by both Barbaig and Hadzabe men and women of Mbulu district. It is worth noting a belief in witchcraft was identified by vulnerable women in Mbulu district as well as the physically disabled in Ilala. The Barbaig ethnic group went further by saying that beliefs in witchcraft leads to stigma '*minima*.' *Minima* among Barbaigs is taken to mean stigma against a woman giving birth before marriage. Such a woman is supposed to leave home and not be allowed to come back again she is married. *Minima* may also mean stigma associated with a

married woman giving birth and unfortunately the baby dies - she is forced to leave her husband and find another man who will cleanse her by impregnating her. Once cleansed, by giving birth to a child whose father is not her husband - she can go back and be accepted by her husband.

People living with albinism identified limited knowledge among community members regarding albinism as a priority research area. They also mentioned stigma and discrimination as key priority areas which need research. It is important to note that the killing of albinos as a source of wealth creation in some areas of Tanzania was also identified as a priority research area. Exemption scheme, high cost of special gears/medicines and shortage of human resource for disabled and albinos were considered of as high priorities of margninazed groups in Ilala and Mbulu districts (Tables 6.5 and 6.6). Female genital mutilation and lack of knowledge regarding albinism were the highly ranked priorities among physically disabled and people with albinism, respectively (Table 6.6).

Table 6.5: Health service problems of marginalised groups in Ilala

Physically disabled (N=12)	People with Albinism (N= 10)
Exemption scheme not responsive to the needs of the disabled	Shortage of qualified health workers with expertise in special albino needs
High costs of special gears for the disabled	Health workers limited knowledge on albino special needs
Shortage of trained health personnel for disabled needs	Shortage of special drugs to treat first stages of albinos skin lesions
Poor implementation of health policy for the disabled	Exemption scheme does not recognise special needs of albinos
Long waiting time to get health services	Lack of health education regarding albinism

Table 6.6: Summary voting of social-cultural problems of marginalized groups in Mbulu District

Physically disabled (N= 12)	People with Albinism (N= 10)
Female genital mutilation	Lack of knowledge among community members regarding albinism
Beliefs in witchcraft	Beliefs in witchcraft
Stigma and discrimination against people with disabilities	Community members witchcraft beliefs that killing albinos
Cheating among married couples	Traditional dances during nights
	Female genital mutilation

6.2. Community and District Voice in Health Research Priority Setting

6.2.1. Disease Pattern: Malaria, acute respiratory infection, pneumonia and diarrhoea scored above the mean score of 5.5 5 in the questionnaire sent to the districts (Figure 6.1).

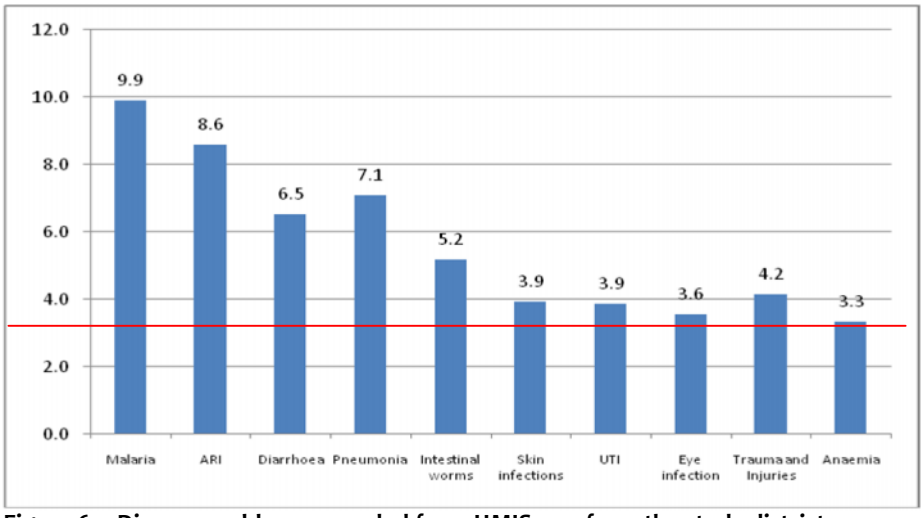

Figure 6.1: Disease problems recorded from HMIS 2011 from the study districts

Community members through Nominal Group Technique mentioned disease problems through voting. Malaria, HIV and diarrhoeal diseases scored above the mean of 5.5 while skin infection was the least scored (Figure 6.2).

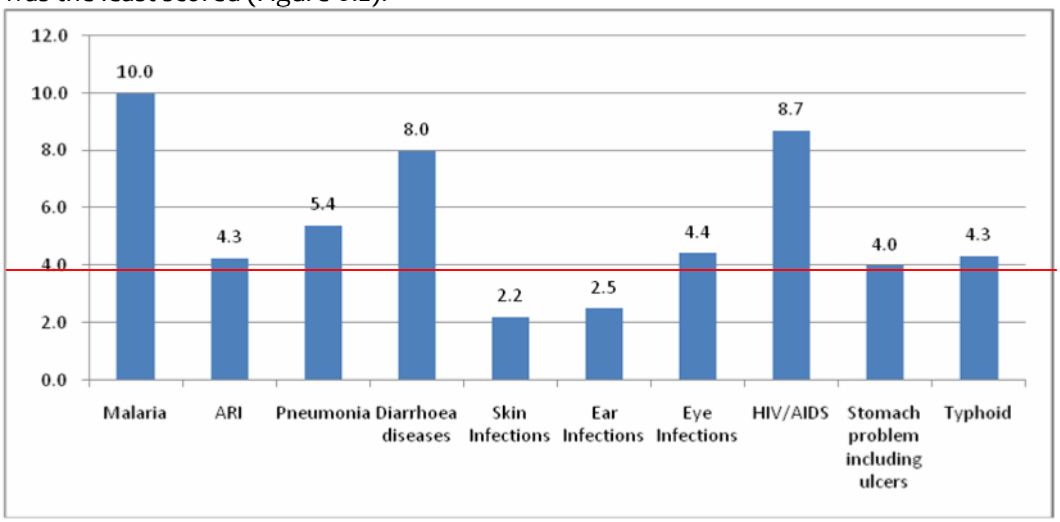

Figure 6.2: Disease problems mentioned by community members in NGT

Using the NGT, district officials scored malaria, acute respiratory infection and HIV/AIDS as the most important diseases. The three conditions scored above the mean while UTI was the least mentioned (Figure 6.3). Intestinal worms and urinary tract infection scores were below the mean.

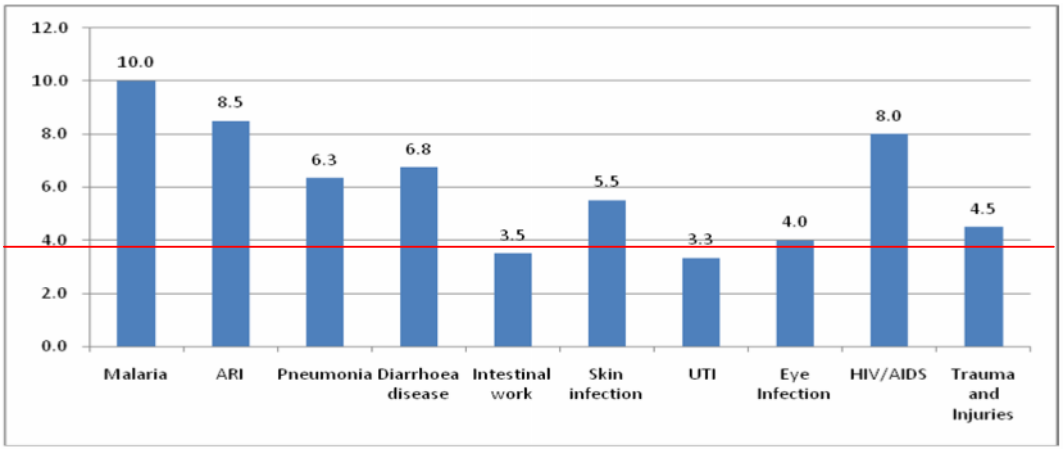

Figure 6.3: Disease problem mentioned by district officials in NGT

6.2.2. Health Service Problems: Shortage of health workers, shortage and delay of funds and transport problems scored above the mean score of 3.0 (Figure 6.4). Other health service problems were delay in seeking health care, large number of mothers delivering at traditional birth attendants' support, poor means of communication, shortage of houses for health workers, poor solid waste management, limited community participation in community health insurance, poor anti-retroviral therapy (ART) adherence, inadequate skills in data collection and management and analysis and poor environmental sanitation and hygiene.

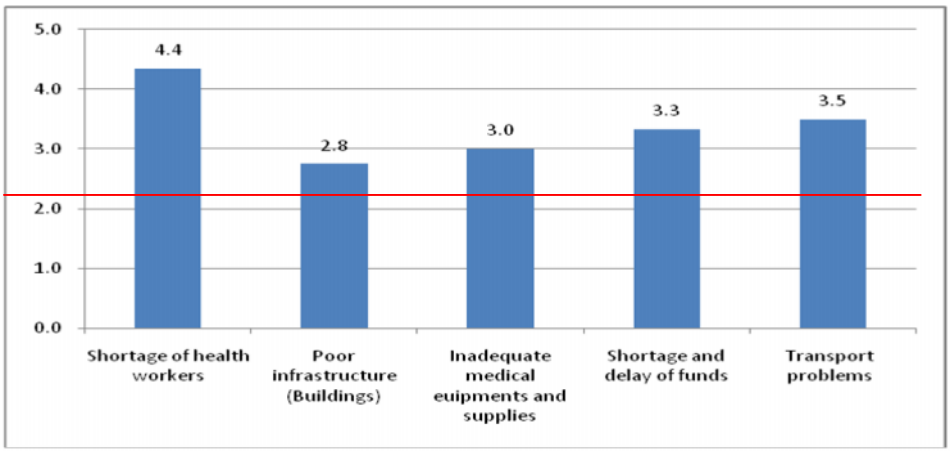

Figure 6.4: Top five health services problems reported through questionnaire sent to districts

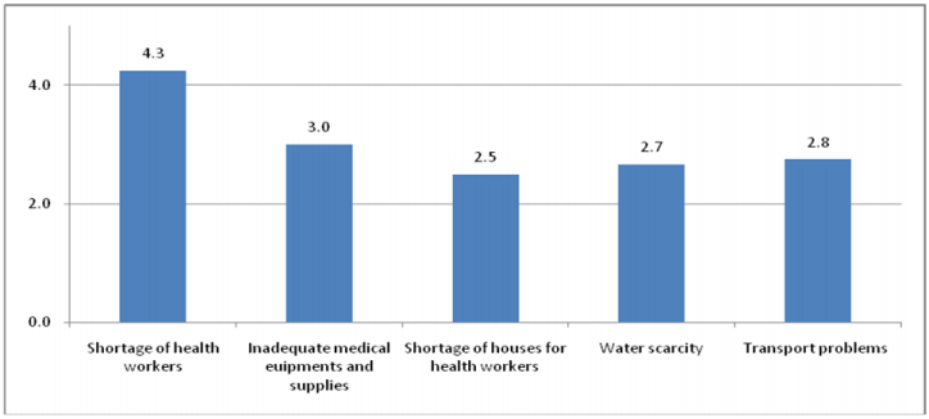

Figure 6.5: Top five health service problems reported by district officials

District officials identifed the shortage of health workers the first priority followed by inadequate medical supplies and equipment, transport problem, water scarcity and shortage of houses for health workers (Figure 6.5). Other mentioned health service problems included accessibility to health services, lack of motivation to health workers, reliability of power supply (electricity) and lack of motivation to health workers.

The community members identified water scarcity, shortage of health workers, inadequate laboratory services, transport problem and inadequate medical equipment and supplies (Figure 6.6). Other priorities included inaccessibility of health services, shortage of houses for health workers, unreliability of electric power supply, poor infrastructure, food scarcity and harsh language used by health workers.

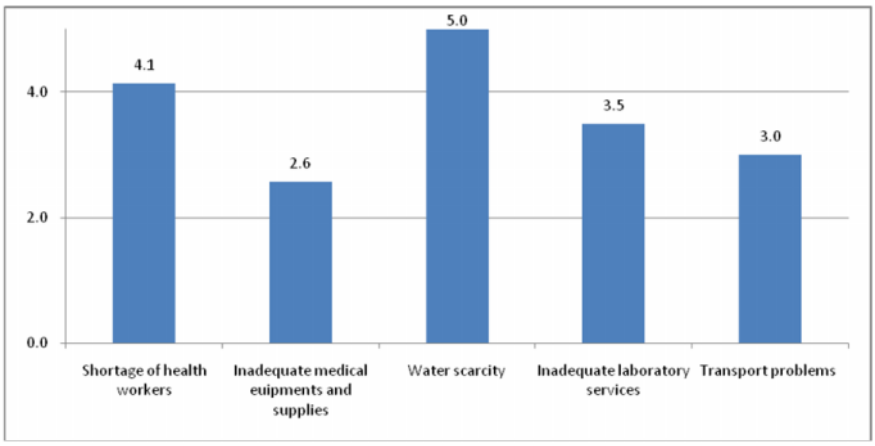

Figure 6.6: Top five health services problems by the community members through NGT

6.2.3. Social cultural problems: In all 24 districts involved in the survey gender inequality, early pregnancy/marriage, beliefs in witchcraft, poverty, and polygamy were considered to be of high priority (Figure 6.7). Other social cultural problems included child labour, lack of potable water, poor usage of latrines, wrong perception towards use modern houses, beliefs on local herbs for diabetic treatments, traditional circumcision using unsterilized equipment, traditional practice on managing convulsion, stigma and discrimination to HIV/AIDS, mental illness, sexual violence, traditional initiation ceremony (*Unyago*), food taboos among women and excessive drinking (alcoholism).

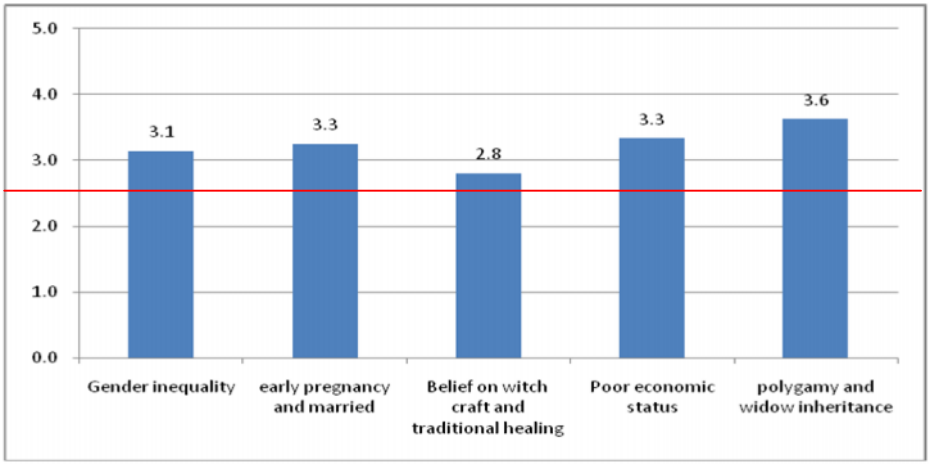

Figure 6.7: Top five social cultural problems reported through questionnaire sent to the districts

The top five social cultural problems were political interference, female genital mutilation (FGM), beliefs in witchcraft, illiteracy and preference of home deliveries. Other social cultural problems included lack of potable water, poor usage of latrines, illiteracy, initiation ceremony (*unyago*), excessive drinking (alcoholism), political interference and nomadic life (Figure 6.8).

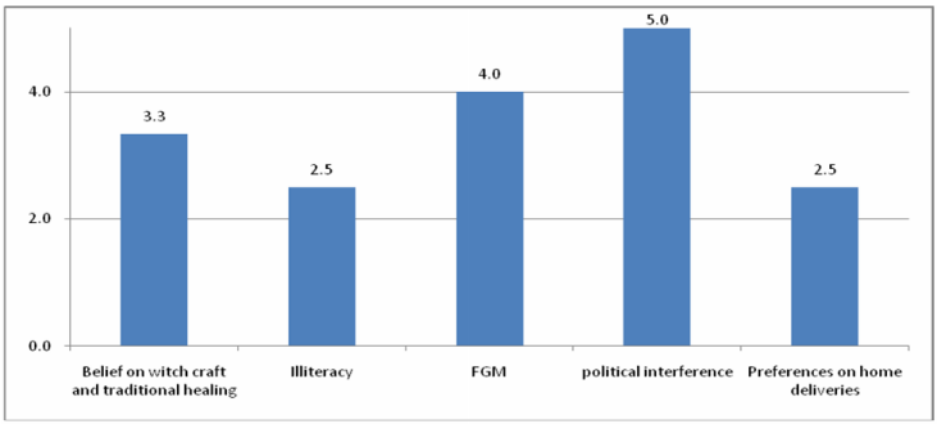

Figure 6.8: Top five socio-cultural problems reported by district officials

According to the community members, the top five social cultural practices that affect health negatively were initiation ceremony (*unyago*) for girls, early pregnancy, beliefs on witchcraft, illiteracy and female genital mutilation (Figure 6.9). Others were eating together on the same plate, violence against women, traditional management of uvulitis, use of hot iron to treat varicose veins, unequal distribution of meals among members of family (head of households getting the lion's share), pornographic shows (using television and video), HIV patients preference to traditional healers, alcoholism, poor male involvement in reproductive health issues, myths on health service provision (e.g. immunization causes sterility), polygamy and widow inheritance (Figure 6.9).

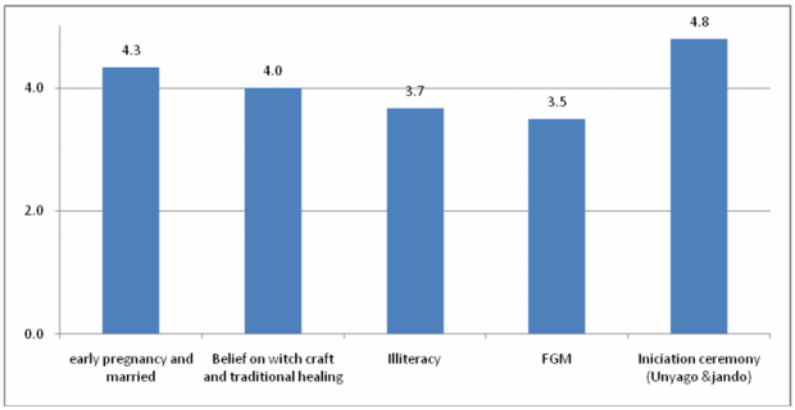

Figure 6.9: .Top five Health services problems reported by community members

6.3. National Stakeholder's health policy priorities

A total of 33 participants attended the national stakeholders' workshop and were from the following 23 organizations/Institutions:

1) Ifakara Health Institute
2) Pemba Public Health Laboratory
3) Ministry of Health and Social Welfare, Zanzibar

4) Ministry of East Africa Cooperation
5) Hubert Kairuki Memorial University
6) Tanzania Commission for AIDS
7) Centre for Disease Control and Prevention, Dar es Salaam
8) Ministry of Health and Social Welfare, Dar es Salaam
9) National Institute for Medical Research
10) Tropical Pesticide Research Institute
11) Bugando Medical Centre
12) United Nations Children Fund
13) World Health Organization, Tanzania
14) Tanzania National Health Research Forum
15) Tumaini University, Dar es Salaam College
16) Sokoine University of Agriculture, Faculty of Veterinary Medicine
17) Kilimanjaro Christian Medical College of Tumaini University
18) Christian Social Services Commission
19) Tanzania Food and Nutrition Centre
20) Ministry of Livestock Development and Fisheries
21) Muhimbili University of Health and Allied Sciences
22) Tanzania Commission for Science and Technology
23) Tanzania Public Health Association

6.3.1. Group discussions

Members of Group 1 observed that policy implementation in Tanzania is sectoral-based. This was described to be ineffective in issues that cut across various sectors. There is need therefore to have a policy which links policies from various sectors, and policies that cuts across sectors/organizations. It was pointed out that new approaches for the control of diseases (zoonoses) through contributions from multiple sectors will be cost-effective and will take on-board societal benefits. Some of the issues that cut across different sectors include climate change, zoonoses and HIV/AIDS. Priority areas identified by Group I are summarised in Table 6.7.

Table 6.7: Thematic priority policy areas identified by Group I

Rank	Thematic priority areas	Specific topics
1	Human Resource	Inadequate human resource in research policy analysis
2	Implementation of policy	Strengthening, effective implementation of existing policies Enforcement and Re- enforcement
3	Monitoring and Evaluation	Reinforcing policy, Accountability
4	Dissemination of findings	Advocacy for evidence-based decision making Repackaging research in a user friendly way Application of research findings in policy formulation and practice
5	Multi-sectoral approach interventions	Zoonoses, Climate change and health, Health systems
6	Health care financing	Adequate funding of health services Health insurance
7	Research information resource centre	Re-packaging of health research findings Knowledge translation Health policy analysis and formulation

In group II, the discussion was mainly based on the following thematic areas: health insurance, maternal and child health, integrated health services, HIV and nutrition, climate change and health, human resource for health and gender violence. The group observed that currently health insurance does not cover all those who need it. It was realised that the high maternal mortality rate is likely to be attributed to lack of appropriate health financing mechanism including health

insurance besides the long distances to healthcare facility. Discussants in group II were of the view that in Tanzania, individual household out-of-pocket contribution to health cost is extremely high and it is the most reliable mechanism for household health financing. However, the majority of the population are poor and hence cannot access healthcare service. Of recent, impact of climate change on health, water and nutrition has been realised. The group discussants were of the opinion that climate change impact on health, water and nutrition cuts across a number of sectors and therefore its mitigation should be approached in a multi-sectoral manner. Specific areas are summarized in Table 6.8.

Table 6.8: Thematic priority policy areas identified by Group II

	Thematic priority areas	Specific topics
1	Health insurance	Financing mechanisms and health insurance coverage
2	Maternal health	Equitable access to health care Geographical accessibility of health services Affordability of health care services
3	Integrated health care services	- Sustainability of vertical disease control programmes -Integrated health care services
4	HIV/AIDS nutrition	- The impact of nutrition/food security on the uptake, compliance and adherence to anti-retroviral therapy
5	Climate change and health	-Impact of climate change on health and nutrition
6	Human resource	- Involvement of the private training institutions in offering courses for paramedics
7	Gender-based violence	Capacity in managing and mitigating gender-based violence

The group pointed out that vertically implemented health programmes are not sustainable, mainly because they are donor-driven. They proposed that there is need for such programmes to be integrated in the district health care services and implemented horizontally. An emphasis was placed on the need to establish and strengthen inter-sectoral collaboration in issues that cut across sectors. This included climate change, zoonoses, epidemic prone diseases such as cholera and meningitis. It was further observed that human resource for health crisis has been for quite some time a government business. For instance, to date, private institutions have not been involved in the scaling up of the capacity building of the middle cadre of health workers. They urged that it is time that private institution are allowed to train such cadre to alleviate the shortage of human resource in the health sector. Gender violence was mentioned to be on the increase. However, a number of healthcare providers lack the skills to manage gender violence. It was therefore proposed that a policy addressing gender violence be formulate to provide guidelines on how to handle it.

Members of Group III presented five thematic priority areas which included integrated health care delivery, neglected diseases, health delivery system, multi-sectoral collaboration, and human resource for health. Some of the thematic areas were similar to those presented by groups I and II. The group emphasised the need for an integrated approach in primary health care service, more particularly in addressing the traditionally known diseases such as malaria, tuberculosis and HIV/AIDS (Table 3). The current vertical programmes could be integrated and collaboratively support services that are provided horizontally. Human resource for health was identified as an important policy issue under two thematic areas, namely Health Delivery Systems and Human Resources. However, unlike in the other two groups, administrative issues and deployment were identified as key issues as far as human resource is concerned. A number of participants raised their concern on the poor enforcement of policy in the country. A number of health policies that are in place are not implemented effectively. It was felt that this is the right time for government to come up with a policy that requires re-enforcement of policies.

Table 6.9: Thematic priority policy areas identified by Group III

Rank	Thematic priority areas	Specific Issue(s)
1	Integrated primary health service delivery	- Integrated approach in traditionally known disease interventions -Need for integrated care approach to work more collaboratively
2	Neglected diseases	- Need to strengthen community based strategies
3	Health delivery system	- Human resource – capacity of health workers -Equity and access to health care - Health financing - Collaborative approach
4	Multisectoral collaboration on cross cutting issues	Linkage between the Ministry of Health and other sectors
5	Human resources	- Administration - Deployment

During the plenary session discussion, five priority policy issues were identified and agreed upon (Table 6.10). Realizing the weakness in enforcement and reinforcement policies, the workshop participants emphasized on the need for Monitoring and Evaluation as an important component in the implementation of policies in the country.

Table 6.10: Thematic priority policy areas identified during plenary session

Rank	Priority policy issues	Specific Issue(s)
1	Health insurance/financing	- Health care accessibility - Health care delivery system - Health access and maternal mortality - Insurance mechanisms and coverage
2	Multisectoral oriented policies	Collaboration within and between sectors in addressing cross-cutting issues such as: financing, climate change, zoonoses, malnutrition, standards and gender issues
3	HIV/AIDS and Nutrition	Impact of nutrition on HIV and vice versa
4	Human resource for health	- Human resource capacity and skill mix - Involvement of the private sector in training of paramedics
5	Integrated health care approach	

6.5. Priority research areas by National Disease Control Programmes

Only a few national programmes had opportunities to present their respective health research priority areas

6.5.1. Neglected Tropical Disease Control Programme: Diseases under the Neglected Tropical Diseases (NTD) are Lymphatic Filariasis, Onchocerciasis, Trachoma, Soil Transmitted Helminthiasis (STH) and Schistosomiasis. Lymphatic Filariasis, Onchocerciasis, Human African Trypanosomiasis, Trachoma, Leprosy, Cysticercosis, and Plague are targeted for elimination worldwide by 2020, while STH and Schistosomiasis are still targeted for control. The following areas were considered as priority research topics for the 2013-2018 period:

1. Strengthening community based strategies:
    a. New and innovative methods for mass drug administration and surveillance to manage and treat multiple NDTs at once
    b. Use of Community Directed Distributors *vis-avis* use of health workers in health facilities in delivering Mass Drug Administration (MDA)
    c. Innovative ways of diagnosing NTDs using modern methods
2. Understanding NTDs distribution and estimate burden of diseases
    a. Complete mapping of NTDs in Tanzania (Trachoma, Onchocerciasis, Lymphatic Filariasis remapping)

b. Discern impact of interventions on specific NTDs including LF, STH, schistosomiasis and onchocerciasis
3. Conduct operational research on NTD distribution
4. Pharmacovigilance and Pharmacoactivities on NTDs

6.5.2. Health Systems: Priority broader heath systems areas include the following: (i) Service delivery and HRH management process; (ii) Medicines, Diagnostics and Supply chain management; (iii) Blood safety and availability for rural expansion of surgical interventions and RTA victims; (iv) Social protection and health care financing; (v) Socioeconomic and cultural determinants of health

6.5.3. HIV and AIDS Research Agenda: In general, the National HIV and AIDS Research and Evaluation Agenda intends to:

a) Direct and support high quality HIV and AIDS research and evaluation
b) Guide individual researchers, research institutions and other stakeholders to prioritize HIV and AIDS research
c) Harmonize research on HIV and AIDS in the country

The main focus shall be directed to:

- Research addressing vulnerable populations
- Gender based research
- HIV at workplaces
- Youth in and out of Schools
- Bio-medical research (vaccines, genetic studies, HIV-TB coinfections, diagnostic, microbicides, immune-modulators, anti-retroviral drugs)
- Social-economic aspects of HIV
- HIV/AIDS and socio-cultural factors
- Basic science research especially immuno-pathogenesis and viral dynamics
- Care and treatment
- Communication in context of HIV and AIDS
- Studies on quality of care in relation to HIV and AIDS
- Stigma and discrimination in the context of HIV and AIDS
- Behaviour and social change communication
- Condom use behaviour
- Risky and safer sex behaviours
- Voluntary Counselling and Testing (VCT
- Care and support to vulnerable populations including orphans
- Home based care services

6.5.4. Multi-sectoral health research priorities: Participants of the multi-sectoral workshop on health research priorities identified 19 areas. The top-five priority areas include Communicable diseases, Reproductive and maternal health, health systems, newborn and child health and food and nutrition (Table 6.11)

Table 6.11: Multi-sectoral health research priority areas ranking, 2011

Research area	Ranking
Communicable Diseases	1
Reproductive and Maternal Health	2
Health Systems	3
Newborn and Child Health	4
Food and Nutrition	5
Non communicable Diseases	6

Climate Change and Environmental Health	7
Indigenous Knowledge	8
Product development and Commercialization	9
Food and medicine safety	10
Traditional and Alternative Medicine	11
Bioinformatics and Information Technology	11
Socio-Cultural Determinants of Health	13
Injuries	14
Occupational health	15
Violence	16
Substance Abuse	17
Oral Health	18
Geriatrics and Elderly Health Care	19

6.5.5. National Consultative Stakeholders Workshop: Of the total 44 participants, 24 (54.5%) provided their individual list of research priorities. In total 62 priority areas were identified. Following individual scoring, participants were divided into 3 groups and asked to make a new list of priority areas and score after discussing within a group while referring to their individual list and scores. This exercise reduced the priority areas from 62 to 24 (Table 6.12). Number of areas such as Climate Change, were scored low after group discussions with some remains to be highly important such as Health Systems.

A total of 39 research areas were identified by the three groups. Top-ten research priority areas were Climate Change, Health Systems, Injuries, Malaria, HIV/AIDS, Health Financing, Human Resources, Reproductive, Child and Neonatal Health, Disease Surveillance, Health Service Delivery, and Water, Hygiene and Sanitation (Table 6.12).

Table 6.12: Identified priority areas by individuals with the score and rank (n>10)

Research Area	Broad Category	Rank
Climate change and Environmental Health	Climate Change	1
Health Systems	Health System	2
Injuries	Biomedical	3
Malaria	Biomedical	4
HIV/AIDS	Biomedical	6
Health financing	Health System	5
Human resources for health	Health System	7
Reproductive, Child and Neonatal Health	Biomedical	8
Disease Surveillance	Health Systems	9
Health service delivery	Health Systems	10
Water, Sanitation and Hygiene	Health System	11
Access of Health Services	Health System	12
Non-communicable diseases	Biomedical	13
Tuberculosis	Biomedical	14
Substance abuse	Biomedical/Social Determinants	15
Violence	Biomedical/ Social Determinants	16
Acute Respiratory Infection	Biomedical	17
Cardiovascular Diseases	Biomedical	18
Medicine and Medical Supplies	Health System	19

Research Area	Broad Category	Rank
Product development and Commercialization	Biomedical	20
Socio-cultural determinants of health	Socio-cultural determinants	21
Communicable diseases	Biomedical	22
Disease Control	Health System	23
Neglected tropical diseases	Biomedical	24
Occupational health	Health System	25
Public-Private Partnership	Health System	26
Food and Nutrition	Biomedical	27
Zoonoses	Biomedical	28
Diarrhoea	Biomedical	29
Traditional and Alternative medicine	Biomedical	30
Geriatrics and Elderly health care	Biomedical/Health Systems	32
Alcohol and drug abuse	Socio-cultural determinants	31
Health policy	Health System	33
Health information	Health System	34
Indigenous knowledge	Health System	35
Oral Health	Biomedical	36
Cancer	Biomedical	37
Diabetics	Biomedical	38
Typhoid Fever	Biomedical	39

When the research areas were summarized into major groups of Biomedical, Health Systems, Socio-cultural determinants and Climate change, the Biomedical Research category accounted for about two thirds (63.6%) of the subjects (Table 6.13).

Table 6.13: Identified priority areas by major categories by individuals as per frequencies

Category	Frequency	Percent	Rank
Biomedical	194	63.6	1
Health System	77	25.3	2
Social determinants	23	7.5	3
Climate Change	11	3.6	4

For prioritization purposes, the priorities were divided into biomedical research, health system and social determinants thematic areas (Table 6.13). Biomedical research refers to health problems/conditions, biological processes and pathological mechanisms. In this context, biomedical research included clinical research (referring to the efficacy of diagnostic, therapeutic and preventative procedures). Health systems research refers to both health policy research and operational research. The latter refers to the delivery of research services. Health policy research integrates the results of different types of research to select policy options (Barron et al., 1997). On the other hand, social determinants of health are the economic and social conditions and their distribution among population - that influence individual and group differences in *health status*. The WHO (http://www.who.int/social_determinants/en/) defines the social determinants of health as the conditions in which people are born, grow, live, work and age, including the health system. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen within and between

countries. The Commission on Social Determinants of Health of the World Health Organization has identified three overarching focus areas:

a) Improve daily living conditions
b) Tackle the inequitable distribution of power, money, and resources
c) Measure and understand the problem and assess the impact of action

When the priority research areas were analysed by sub-categories, communicable diseases ranked high by 24.43%. This category was followed up by non-communicable diseases and Health Systems. However, when all components of Health Systems were taken together, they accounted for 24.4% (N=7) (Table 6.14).

Table 6.14: Frequency of individual identified priority areas by sub-categories

Sub Category	Frequency	Percent	Rank
Communicable Diseases	71	23.43	1
Non-Communicable Diseases	51	16.83	2
Health Systems	41	13.53	3
Reproductive and Child Health	26	8.58	4
Food and Nutrition	23	7.59	5
Socio-cultural determinants of health	16	5.28	6
Health Service Delivery	14	4.62	7
Traditional Medicine	11	3.63	8
Climate Change	10	3.3	9
Health Information System	8	2.64	10
Occupational Health	6	1.98	11
Product development	5	1.65	12
Human Resource for Health	3	0.99	13
Health Economics	3	0.99	14
Geriatrics and elderly health care	2	0.66	15
Health policy	2	0.66	16
Indigenous knowledge	2	0.66	17
Monitoring and Evaluation	2	0.66	18
Oral health	2	0.66	19
Water and sanitation	2	0.66	20
Environmental health	1	0.33	22
Medical equipment	1	0.33	23

In the plenary session the findings from the three groups were presented, discussed and agreed as the National Health Research Priorities for 2013-2018 (Table 6.15).

Table 6.15: National Health Research Priorities for 2013-2018

Rank	Biomedical Research	Health Systems	Social Determinants of Health
1	Communicable Diseases	Medicines and Medical supplies	Stigma and discrimination
2	Non communicable Diseases	Human Resource for Health	Gender-based violence and sexual abuse
3	Reproductive, Maternal, Newborn and Child Health	Health Financing	Custom, traditions and beliefs
4	Product development and Commercialization	Health Services Delivery	Gender inequalities
5	Climate Change and Environmental Health	Reproductive and Child Health	Key population behaviours
6	Food and Nutrition	Health Information Management (including Disease Surveillance)	Governance for health and development
7	Bioinformatics and Information Technology	Water, Hygiene and Sanitation	Socio-economic status (poverty) and health

8	Traditional and Alternative Medicine	Health Care Infrastructure	Substance abuse
9	Medicine safety	Behaviour Change Communication	Social and health equity
10	Occupational health	Health Policy and Planning	Social cohesion
11	Injuries	Disaster Management in Health	Female genital mutilation
12	Substance Abuse	Inter-sectoral Collaboration	
13	Oral Health	Public Private Partnership	
14	Geriatrics and Elderly Health Care	Specialized Services for Special Groups	
15		Decentralization by devolution	

Specific research topics

Biomedical specific topics

1) Acute respiratory infections
2) Asthma
3) Bioinformatics and Information technology
4) Brucellosis
5) Cancers
6) Cardiovascular diseases
7) Climate change
8) Oral health
9) Diabetes
10) Diarrhoea
11) Cysticercosis
12) Ear problems
13) Eye problems
14) Fistula
15) Food and nutrition
16) Geriatrics and Elderly health care
17) HIV/AIDS
18) Hydrocoele
19) Hypertension
20) Injuries
21) Intestinal Worms
22) Jaundice
23) Joint pain
24) Malaria
25) Malnutrition
26) Measles
27) Meningitis
28) Neglected tropical diseases
29) Obstructed labour
30) Occupational health
31) Peptic ulcers
32) Pneumonia
33) Product development
34) Relapsing fever
35) Schistosomiasis
36) Sexually transmitted diseases
37) Sleeping sickness
38) Trauma and injuries
39) Tuberculosis
40) Typhoid
41) Ulcers
42) Urinary retention
43) Urinary tract infection
44) Zoonoses

Health Systems

1) Health education and promotion
2) Distance to health care facilities
3) Lack of health care facilities
4) Clean and safe water
5) Health information systems and diseases surveillance
6) Public-Private-Partnership
7) Ambulance services
8) Medicine, Diagnostics and Supply chain management
9) Waiting and service time
10) Management of HIV and nutrition
11) Blood safety and availability
12) Patient quality of care (for disabled persons)
13) Integrated health care approach
14) Multi-sectoral oriented policies
15) Health policy
16) Social protection, health care financing and exemption system
17) Stigma and discrimination
18) Home based care services
19) Human Resource for Health
20) Workplace interventions
21) Care and support of vulnerable populations including orphans

Socio-determinants of health

1) Polygamy and widow inheritance
2) Stigma and discrimination
3) Gender violence and child abuse
4) Food taboos
5) Cigarette smoking
6) Female genital mutilation
7) Preference of place of delivery
8) Alcoholism
9) Beliefs in witchcraft
10) Gender equity
11) Early pregnancy
12) Traditional Initiation ceremony
13) Socio-economic and health
14) Socio-cultural factors of diseases
15) Substance abuse
16) Indigenous Knowledge
17) Behaviour and social change communication

CHAPTER 7

DISCUSSION

The current priority setting process has involved the community, district health managers, national disease control programme and national level key stakeholders. In addition, for the first time, the process has involved marginalised and vulnerable groups and all key sectors in Tanzania. Both specific areas in biomedical, health systems and social determinants of health were identified by all groups involved in the priority setting exercise. Like in the 3rd national health research priorities, communicable diseases and reproductive, maternal and child health were ranked among the top-most priority areas in health research. Similarly, analysis of the Health Management Information System indicates that communicable diseases including malaria, HIV/AIDS, acute respiratory tract infections, diarrhoeal diseases and pneumonia, account for more than three-fourth of the causes of outpatient attendances, admissions, and deaths.

Non-communicable diseases were ranked second to communicable diseases unlike in the previous priority list. The non-communicable diseases, mainly cardiovascular diseases, diabetes, chronic respiratory diseases, and cancer, have emerged relatively unnoticed in the country, and are now raising major health concerns among communities and policy makers (Mfinanga et al., 2011; Mayige et al., 2011).

In terms of health systems, medicine and medical supplies, human resource for health and health financing were ranked as three most important priority research areas. In the previous list, the top-most three priorities under health systems were human resource for health, reproductive and child health and health service delivery (NIMR, 2006). On the other hand, stigma/discrimination, gender-based violence and sexual abuse and customs, traditions and beliefs were considered as most important research areas under the social determinants of health.
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Statistics on the burden of disease among marginalized groups and people with disabilities are scarce. Only a few studies on disease problems among the pastoralists have been documented (Mboera et al., 1996; Mwanziwa et al., 2010; https://www.ccbrt.or.tz/fileadmin/documents/publications/The_Forgotten.pdf). Results of studies described in this report have shown that identified research agendas vary within and between groups and sites in terms of prioritising research areas in diseases, health services problems and socio-cultural determinants of health. As it is indicated in the findings, variations in terms of research priorities were related to the health specific needs of particular groups. For example, while malaria was prioritised by almost all groups, the elderly and people living with albinisms did not consider it as a research priority. Instead they prioritised disease problems which were specifically related to their conditions. While people living with albinism prioritised skin cancer and eye sight problems as first and second priority research areas, the elderly groups considered diabetes and blood pressure as the first and second priority research areas. These findings have important policy implications relating to the allocation of resources for health research. That is, globalising health research priorities without considering specific local needs of special groups may lead to inequitable distribution of health resources, including those needed to conduct health research. In almost all the involved groups and sites, malaria, tuberculosis and HIV/AIDS were prioritised as diseases which need research attention. This finding is consistent with both the previous National Health Research Priorities list (2006-2011) and other internationally endorsed health research agendas including the Millennium Development Goals.

Prioritisation of health service problems also indicated some interesting commonalities and divergences between groups and across sites. Overall, the question of shortage of medicines and qualified health workers was a priority mentioned by almost all groups in all study sites. For example, people living with albinism prioritised not only shortage of health workers but workers with specialised expertise to deal with albino diseases and conditions. The same was for medicines needed to treat specific albino's diseases and health conditions such as skin cancers.

Shortage of safe and clean water was ranked as the first priority by the *Hadzabe* and *Barbaig* ethnic groups as a health service area where research efforts and resources need to be directed. In addition, the same groups prioritised diarrheal diseases as second in the list of their identified research priorities. This prioritisation could probably be because of water-related problems. It has already been documented that pastoralism is complex; it seeks to maintain a balance between water, pastures, livestock and people, in uncertain and variable environments, where alternative land uses are risky. Recent studies have documented the livelihoods challenges that face pastoralists and hunters and gatherers. The changes in weather patterns have resulted in frequent severe droughts and floods in the semi arid habitats of such communities. Moreover, water scarcity has already been described as among the main problems faced by many societies in every continent. Almost one-fifth of the world's population, live in areas of physical scarcity, and 500 million people are approaching this situation. Another 1.6 billion people, or almost one quarter of the world's population, face economic water shortage (http://www.un.org/waterforlifedecade/scarcity.shtml).

Water use has been growing at more than twice the rate of population increase in the last century, and, although there is no global water scarcity as such, an increasing number of regions are chronically short of water. Water supply and sanitation in Tanzania is characterised by decreasing access to improved water sources in the 2000s, steady access to some form of sanitation, intermittent water supply and generally low quality of service (MoWI, 2009). Recent statistics indicate that only 46.8% of the households in Mainland Tanzania have improved source of water (THMIS, 2013). The way water scarcity issues are addressed impacts upon the successful achievement of most of the Millennium Development Goals. Access to water for domestic and productive uses has a direct impact on poverty and food security. Access to water, in particular in conditions of scarce resources, has important gender related implications, which affects the social and economic capital of women in terms of leadership, earnings and networking opportunities. As found in the studies reported in this report, access to water, and improved water reduce transmission risks of water borne and water related diseases such as diarrhoeal diseases.

Stigma and discrimination against people living with HIV/AIDS are quite common in Tanzania. Studies done in communities in north-western Tanzania showed the level of stigma and denial for AIDS and HIV to be very high. Stigma and the associated discrimination have been documented as an important barrier for accessing health care for the stigmatised groups (Kisinza at al., 2002, Kayungilizi, 2007; Mutalemwa et al., 2008). In the current studies on priority setting, there was commonality between the physically disabled and people living with albinism in terms of prioritising stigma and discrimination as areas which need a focused research attention. The perception that people living with albinism and the physically disabled persons are stigmatised and that the solution to this problem require evidence-based interventions may also be linked to another research priority that is lack of health education among community members and health workers regarding people living with albinism.

The findings have also highlighted on how some health financing modalities might be inequitable if not implemented with effective safety nets to protect marginalised and vulnerable groups in

the society. Interestingly, poor implementation or lack of the current exemption system to recognise marginalised groups, has been commonly prioritised by the elderly, people living with albinism and the disabled as an area that needs research attention in order to design more equitable health financing interventions. In different settings including Tanzania, the literature has vastly documented the inadequacies existing in the implementation of exemption systems and their associated equity implications in utilisation of health services relative to health care needs. The re-emergence of this same research agenda and especially highlighted by the marginalised vulnerable groups implies two issues related to the conduct of research and use of research findings to inform policy and practice. Firstly, it may be that there are currently no sufficient evidence to design pro-equity financing interventions in favour of marginalised and vulnerable groups. Secondly and probably more important, is the possibility that the research agenda which was meant to design intervention to address the problem might not have been set through a consultative and participatory process to make them fair and legitimate.

Data from HMIS and responses from district officials and community show the top ten diseases according to health problems in the study districts. Malaria scored first in HMIS and in both district officials' and community interviews. Whereas district officials reported HIV/AIDS as the second priority health problem, community members considered it as the third. Anaemia was the least mentioned in the top ten by HMIS and did not feature in the community priorities while diseases like tuberculosis and sexually transmitted diseases were mentioned in few districts in the top ten positions.

District officials and community participants identified health service problems to include shortage of health workers, lack of transport, and inadequate medical equipment and supplies (such as medicines) and poor infrastructure (buildings, roads). Lack of reliable transport caused most of the patients to travel long distances when seeking medical care. Lack of electricity connectivity and water scarcity were other problems prioritised at health facility level and this made difficult for health workers to perform some of the activities such as surgery. Lack of laboratory services was mentioned by community members. The respondents claimed to usually receive treatment without clear laboratory diagnosis on view that such services are not available. This complicates life as in case of prolonged illness patients have to be referred to district hospitals for laboratory diagnostic procedures and treatment though not all patients afford to go to district hospitals due to financial constraints.

Social determinants of health were considered as an important priority research area at both community, district and national levels. Gender equity, polygamy, gender inequality, gender-based violence, child abuse and drug abuse were some of the priority research topics. Equity means fairness. Equity in health connotes that the needs of people guides the availability of opportunities for well-being (WHO, 1996). The International Society for Equity in Health defines equity in health as the absence of systematic and potentially remediable differences in one or more aspects of health across socially, demographically, or geographically defined populations or population sub-groups (ISEQH, 2000). Culture, socio class, ethnicity, language proficiency, area of residence, and health literacy level are common and widespread barriers to health equity (Starfield, 2006). The roots of health disparities have been described to lie far beyond the socio-economic inequality and much of the solution to health disparities lies in macro social and economic policy and policy collaboration and coordination across governments (Gardner, 2008).

Gender violence and child abuse were identified by a number of groups to be important and priority research areas. In study in northern Tanzania, 21% percent of women has been reported to experience intimate partner violence - having been threatened with physical abuse, subjected

to physical abuse or forced into intercourse by a partner. Gender inequality within sexual unions is associated with intimate partner violence (McCloskey et al., 2005).

Traditional initiation practices such as *unyago na jando* applied to young daughters and boys were identified as areas that need research. For instance, hiding young girls in private rooms for some period when receiving training on how to handle their marriage life was mentioned. This practice encourages them to engage in sexual practices resulting into early pregnancies. Also traditional male circumcision was said to be a problem in some districts because traditional healers perform circumcision using unsterile instruments. They use one knife to attend many children during circumcision procedures which may result in cross infection between infected and uninfected person as previously shown by Kilima et al. (2012).

The findings from all levels indicate that the health system in Tanzania is weak. Similarly, the recent Tanzania Health System Assessment 2010 report (Musau et al., 2011) has indicated that while Tanzania's health indicators in some key areas have shown improvement, challenges abound within the health system. Limited financial and human resources, administrative shortcomings and unfulfilled plans and promises are among the factors impending the development of the health sector in the country. Decentralization by devolution (giving local authorities some mandate on decision making, functional responsibility and resources from central to local government authorities) was also cited to contribute to the health sector underperformance (Musau et al., 2011). Limited human resource capacity is widely recognized as a critical issue in Tanzania. The number of skilled workforce in the health sector is inadequate (MoHSW, 2010). While this problem is often analyzed in terms of the numbers of various cadres of staff, there are other aspects of staff management that impact the productivity of the existing staff. A review of staff incentives to find the most appropriate means to motivate them is an essential element that requires an innovative look and bold action (Musau et al., 2011).
There has been a sharp decline in the number of health workers in Tanzania between 1994/95 and 2001/02. The present number of health personnel in Tanzania is low both by international standards and relative to national staffing norms. Moreover, there is a marked geographical imbalance across the country and across districts (Mæstad, 2006). Shortage of health personnel and poor health worker performance are among the most pressing problems of health systems in low-income countries. Lack of personnel with relevant skills is a threat to the success of programmes intended for scaling up health services in order to reach the Millennium Development Goals (Kisinza et al., 2002).

Health financing was identified by all groups as a priority research area. Health financing refers to the mobilization and allocation of health resources. It is a way in which individuals, households, and institutions pay for their health services. The findings in this report indicate that there was poor access by the very poor and vulnerable groups to health care. To-date the effectiveness of the exemption fee to the old and poor individuals remains to be desired. Health services in Tanzania are often not accessed by the very poor and vulnerable groups. Inaccessibility of health services has been attributed to long distances to facilities, inadequate and unaffordable transport systems, poor quality of care, and poor governance and accountability mechanisms (Mandani & Bangser, 2004).

Most of the stakeholders were in favour of a multi-sectoral approach to tackling health issues of cross-cutting nature. These included epidemic-prone diseases such as cholera and meningitis, zoonoses, HIV/AIDS, malaria, malnutrition and climate changes. Intersectoral action refers to actions affecting health outcomes undertaken by sectors outside the health sector, possibly, but not necessarily, in collaboration with the health sector. The national level participants called for the need to fostering a multi-sectoral approach, for more consistency and coherence among policies,

for better coordination of actions at national level, for collection and exchange of best practices across sectors and for guidelines based on scientific evidence. The call for intersectoral approaches in health interventions has been expressed by farming communities as reported by a study in Mvomero District, Tanzania (Mlozi et al., 2006).

Already, the HIV/AIDS pandemic has been declared as a "national emergency" in Tanzania, thus calling for combined efforts to combat the spread of the disease. A multisectoral response, with all sectors contributing in the ways that they are best placed to, is seen to be of crucial importance. To-date, a multi-sectoral approach is supporting the joint efforts of different stakeholders in their response to the HIV epidemic. In recent years, an inter-sectoral approach in responding to zoonotic diseases through a one health initiative has been advocated in Sub-Saharan Africa (www.oie.int/doc/ged/D11687). However, in Tanzania, policy documents describing the need and modes of operation towards inter-sectoral interventions for a number of health problems are not available.

In conclusion, Tanzania has developed a list of national health research priorities. Like in the previous health research priorities, communicable diseases and reproductive, maternal and child health and non-communicable diseases are considered to be top-most priority areas in biomedical research. In addition, medicine and medical supplies, human resource for health and health financing are the most important priority health system research areas. On the other hand, stigma, gender-based violence and sexual abuse and customs, traditions and beliefs are the most important research areas under the social determinants of health that need to be prioritised in the coming five years.

REFERENCES

AbouZahr, C., Wardlaw, T., Stanton, C., Hill, K. (1996) Maternal mortality. *World Health Statistics Quarterly* 49, 77-87.

Annual Reports of the Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania, 2006-2010.

Annual Reports of the National Institute for Medical Research, Dar es Salaam, Tanzania, 2006-2010

Annual Reports of the Sokoine University of Agriculture, Morogoro, Tanzania, 2006-2010

Babbie, E. (1998) *The Practice of Social Research*. Wadsworth Publishing Company, ITP, 8th Edition.

Barron, P., Edwards, J., Makhanya, N., Palmer, N., Bradshaw, D., Zwarenstein, M. & Makubalo, L., (1997) Health Systems Trust, Health Systems Research in South Africa. *South African Medical Journal* (Public Health Issue), 87, 236-237.

Bobadilla, J.L. (1996) *Priority Setting and Cost Effectiveness*. In: Janovsky, K. ed. *Health Policy and Systems Development*. An agenda for research. World Health Organization; 43-60, Geneva.

Bobadilla, J.L., Cowley, P., Musgrove, P. & Saxenian, H. (1994) Design, content and financing of an essential national package of health services. *Bulletin of the World Health Organization* 72, 653-662.

Briggs, C.J., Garner, P. (2001) Strategies for integrating primary health services in middle- and low-income countries at the point of delivery. Cochrane Database of Systematic Reviews 2001; Issue 4. doi: 10.1002/14651858.CD003318.pub2.

COHRED (2006) Priority Setting for Health Research: Toward a Management Process for Low and Middle Income Countries. Council on Health Research. Available at: www.HealthResearchForDevelopmnet.org

Coreil, J. (1995) Group interview methods in community health research. *Medical Anthropology* 16, 193-210.

Daniels, N. & Sabin, J. (2002) Setting limits fairly. Can we learn to share scarce medical resources? Cambridge: Oxford University Press.

Daniels, N. (2000) Accountability for reasonableness. *BMJ* 321, 1300-1301.

ENHR (1997) *Essential National Health Research and Priority Setting: Lessons Learned* (1997). Council on Health Research and Development (COHRED) document 97.3: June 1997, Geneva.

Froberg, D.G., & Kane, R/L. (1989) Methodology for measuring health-state preferences- I: Measurement strategies; *Journal of Clinical Epidemiology* 42, 345-354.

Gallin, E.K. (2009) Supporting implementation research partnerships for health systems strengthening: one foundation's approach in Sub-Saharan Africa. *Global Forum Update on Research for Health* 5 (www.globalforumhealth.org/) .

Gardner, B. (2008) *Health Equity Discussion Paper: Executive Summary*. Toronto Central LHIN>

GFHR (2002) The 10/90 *Report on Health Research 2001-2002*. The Global Forum for Health Research.

Gibson, J., Martin, D. & Singer, P. (2005) Evidence, economics and ethics: Resource allocation in health services organizations. *Health Care Quarterly* 8.

Gilson, L., Kilima, P. & Tanner, M. (2006) Local government decentralization and health sector in Tanzania. *Public Administration and Development* 14 (5), 451-477.

Green, A. (1972) An Introduction to Health Planning in Developing Countries. Oxford: Oxford University Press: 13: 185.

ISEQH (2000) International Society for Equity in Health (ISEQH). www.iseqh.org/conf2000_en.htm.

Kapiriri, L, Norheim, O.F., Heggenhougen, K. (2003) Public Participation in health planning and priority setting at the district level in Uganda. *Health Policy and Planning* 18, 205-213.

Kapiriri, L. (2003) Opportunities for public accountability in priority setting in health care: the case of Uganda. PhD Thesis, University of Bergen Norway 2003.

Kayungilizi, J. F. (2007) Effects of HIV/AIDS related stigma and discrimination on the social economic status of people living with HIV/AIDS. Retrieved from http://academicarchive.snhu.edu

Kilima, S.P., Shayo, E.H., Msovela, J., Senkoro, K.P., Mayala, B.K., Mboera, L.E.G., Massaga, J.J. (2012) The potential of involving traditional practitioners in the scaling up of male circumcision in the context of HIV prevention in Tanzania. *Tanzania Journal of Health Research 14 (1)*. http://dx.doi.org/10.4314/thrb.v14i1.9

Kisinza, W., Mwisongo A., Makundi E., Mubyazi G., Senkoro K., Magesa S., Malebo H., Mcharo J., Hiza P., Pallangyo., Ipuge Y., Malecela-Lazaro M. (2002) Stigma and discrimination towards HIV/AIDS patients in Tanzania. *Tanzania Health Research Bulletin* 4, (2), 42 - 64.

Maclachlan, M. (1996) Identifying problems in community health promotion: an illustration of the Nominal Group Technique in AIDS education. *Journal of Royal Society of Health* 116, 143-148.

Mæstad, O. (2006) Human Resources for Health in Tanzania: Challenges, Policy Options and Knowledge Gaps. CMI Report.

Magesa, S.M., Mwape, B., Mboera, L.E.G. (2011) Challenges and opportunities in building health research capacity in Tanzania: A case of the National Institute for Medical Research. *Tanzania Journal of Health Research* 13 (Suppl 1): *http://dx.doi.org/10.4314/thrb.v13i5.11*

Makundi, E. (2000) *Community social valuation: use of nominal group technique ranking of health conditions from two communities in Temeke and Moshi districts in Tanzania.* MPhil Thesis, University of Bergen 2000

Makundi, E., Kapiriri, L, Norheim, O.F. (2007) Combining evidence and values in priority setting: Testing the balance sheet method in low-income country. *BMC Health Services Research* 7, 152.

Maluka, S., Hurtig, A-K., San Sebastian, M., Byskov, J., Olsen, Ø.E., Shayo, E., Ndawi, B., Kamuzora, P. (2010) Decentralized health care priority setting in Tanzania: Evaluating against the accountability for reasonableness framework. Social Science & Medicine 71, 751-759.

Martin, D., Abelson, J. & Singer, P. (2002) Participation in health care priority-setting through the eyes of the participants. *Journal of Health Services Research & Policy* 7, 222-229.

Mayige, M., Kagaruki, G., Ramaiya, K. & Swai, A. (2011) Non communicable diseases in Tanzania: a call for urgent action. *Tanzania Journal of Health Research* 13 (Suppl 1) doi: http://dx.doi.org/10.4314/thrb.v13i5.7

Mboera, L.E.G. (2010) NIMR at 30: History, Development, Achievements, and Success Stories. National Institute for Medical Research, Dar es Salaam, Tanzania

Mboera, L.E.G., Kamugisha, M.L., Matiku, P.W., Kani, L., Addai, E., Dlamini, M., Murahwa, F.C., Mdoe, A. (1996) *Analysis of the Malaria Situation in Babati district, Tanzania*.

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.

McCloskey, L.A., Williams, C. & Larsen, U. (2005) Gender inequality and intimate partner violence among women in Moshi, Tanzania. *International Family Planning Perspectives* 31, 124-130.

Mfinanga, S.G.M., Ezekieli, L., Sokoine, K., Ngadaya, E., Mghamba, J., Ramaiya, K. (2011) Public health concern along side with global initiative on the priority action for "silent uprising epidemic" on Non-Communicable Diseases in Tanzania. *Tanzania Journal of Health Research* 13 (Suppl 1). doi: http://dx.doi.org/10.4314/thrb.v13i5.6

Mlozi, M.R.S, Shayo, E.H., Senkoro, E.H., Mayala, B.K., Rumisha, S.F., Mutayoba, B., Senkondo, E., Maerere, A. & Mboera, L.E.G. (2006) Participatory involvement of farming communities

and public sectors in determining malaria control strategies in Mvomero District, Tanzania. *Tanzania Health Research Bulletin* 8 (3), 134-140.

MoCST (2010) The National Research and Development Policy. Ministry of Communications, Science and Technology, United Republic of Tanzania

MoH (1999) Health Sector Reform Program of Action in Tanzania, July 1999 to June 2000 Ministry of Health. March 1999

MoH (2008) National Medium Term Malaria Strategic Plan, 2008-2013.Ministry of Health and Social Welfare, United Republic of Tanzania, Dar es Salaam.

MoHSW (2007) *Primary Health Care Services Development Programme* 2007-2017. Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.

MoHSW (2009) Health Sector Strategic Plan III. United Republic of Tanzania, Ministry of Health and Social Welfare, Dar es Salaam, July 2009-June 2015.

MoHSW (2010) *Health Sector Performance Profile Report 2010 Update.* Ministry of Health and Social Welfare, Dar es Salaam, Tanzania.

Montorzi, G., de Haan, S., IJsselmuiden, C. & Mboera, L. (2009) Council on Health Research for Development (COHRED) Tanzania: An assessment of the health research system. A country report of the AHA series, 2009, pp 92. Available from: http://www.cohred.org/AHA/

Mooney, G.H., Irwig, L. & Leeds, S. (1997) Priority setting in health care: unburdening from the burden of disease. *Australia-New Zealand Journal of Public Health* 21, 680-681.

MoWI (2009) Ministry of Water and Irrigation. *Water Sector Status Report 2009.* Dar es Salaam, United Republic of Tanzania.

Mubyazi, G.M., Mushi, A., Kamugisha, M., Massaga, J., Mdira, K.Y., Segeja, M. &Njunwa, K.J. (2007). Community views on health sector reform and their participation in health priority setting: case of Lushoto and Muheza districts, Tanzania. *Journal of Public Health* 29 (2), 147-156; doi:10.1.1093/pubmed/fdm016.

Murray, C., & Lopez, A. (1996) *Global Burden of Disease.* World Health Organisation 1996

Murray, C.J.L, Frenk, J. & Evans, T. (2007) The global campaign for the health MDGs: challenges, opportunities and the imperative of shared learning. *Lancet* 370, 1018-1020.

Musau, S., Patsika, G.R., Malangalila, E., Chitama, D., Van Praag, E. & Schettler, G. (2011) *Tanzania Health System Assessment 2010*. Bethesda, MD: Health Systems 20/20 Project, Abt Associates Inc.

Mutalemwa, P., Kisoka, W., Nyigo, V., Barongo, V., Malecela, M.N. & Kisinza, W.N. (2008) Manifestations and reduction strategies of stigma and discrimination on people living with HIV/AIDS in Tanzania. *Tanzania Journal of Health Research* 10, 220-225.

Mwanziva, C., Daou, M., Mkali, H., Masokoto, A., Mbugi, E., Shekalaghe, S., Mosha, F. & Chilongola, J. (2010) High prevalence of anaemia in pastoral communities in Kilimanjaro Region: malnutrition is a primary cause among Maasai ethnic group. *Annals of Biological Research* 1 (2): 221-229.

NIMR (2006) Tanzania National Health Research Priorities, 2006-2011. National Institute for Medical Research, Dar es Salaam, Tanzania

NIMR (2008) Strategic Plan III, 2008-2013. National Institute for Medical Research, Dar es Salaam, Tanzania. Available at http://www.nimr.or.tz

ORCI (2010) ORCI Research Agenda. Ocean Road Cancer Institute, Tanzania.

Ottersen, T., Mbilinyi, D., Maestad, O., Norheim, O.F. (2007) Distribution matters: equity considerations among health planners in Tanzania. *Health Policy*, doi:10.1016/j.healthpol.2007.07.012

Redman, S., Caricks, Cockburn, J. & Hirisit, S. (1997) Consulting about priorities for the NHMRC National Breast Cancer Centre; how good is the nominal group technique. *Australian-New Zealand Journal of Public Health* 21, 250-256.

Sera ya Afya (2007) Sera ya Afya. Jamhuri ya Muungano wa Tanzania.

Starfield, B. (2006) State of the art in research on equity in health. *Journal of Health Politics and Law* 31, 1-32.

Steel, R. (2004) *Involving Marginalized and Vulnerable People in Research: A Consultation Document*. INVOLVE

SUA (2006) Research Agenda for 2005-2010. Sokoine University of Agriculture, Morogoro, Tanzania, November 2006.

SUA (2010) Research Policy, Focus Areas, Guidelines and Regulation. Sokoine University of Agriculture, Morogoro, Tanzania. August 2010.

TDHS (2005) *Tanzania Demographic and Health Survey 2004/2005.* National Bureau of Statistics, Dar es Salaam, Tanzania and ORC Macro.

THMIS (2013) *Tanzania HIV/AIDS and Malaria Indicator Survey 2011-12.* Tanzania Commission for AIDS, Zanzibar AIDS Commission, National Bureau of Statistics, Office of the Chief Government Statistician and ICF International 2013.

URT (1999) The Tanzania Development Vision 2025. Dar es Salaam. www.tanzania.go.tz

URT (2005) *National Strategy for Growth and Reduction of Poverty (NSGRP)*. Vice Presidents Office, United Republic of Tanzania, Dar es Salaam, 2005.

URT (2010) *National Strategy for Growth and Reduction of Poverty (NSGRP II)*. Ministry of Finance and Economic Affairs, United Republic of Tanzania 2010.

WHO (1996) *Equity in Health and Health Care.* A WHO/SIDA Initiative. WHO/ARA/96.1. Geneva: World Health Organization.

URT (nd) 'The forgotten' HIV and Disability in Tanzania. https:// www.ccbrt.or.tz/fileadmin/documents/publications/The_Forgotten.pdf