FEASIBILITY OF USING SELECTED ESSENTIAL MONITORING AND EVALUATION INDICATORS FOR MEASURING SUCCESS AND PROBLEMS OF ROLL BACK MALARIA ACTIVITIES IN RUFIJI DISTRICT

BY

MAKEMBA, A.M.

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF PUBLIC HEALTH OF THE UNIVERSITY OF DAR-ES-SALAAM

SEPTEMBER 2003

CERTIFICATION

The undersigned certifies that he has read the dissertation titled "Feasibility of using selected essential monitoring and evaluation indicators for measuring success and problems of roll back malaria control activities in Rufiji District" in partial fulfilment of the requirement for the degree of Master of Public Health

SUPERVSOR: Prof. Zul Premji – MD (Dar), MSc (London), DTM&H (London), PhD (Sweden)

SIGNATURE: ----------

DATE: 15. October. 2003

DECLARATION AND COPYRIGHT

I, Ahmed M. Makemba, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature.....

This dissertation is copyright material protected under the Berne Convention, the Copyright Act 1966 and other International and national enactments, in that behalf, on intellectual property. It may not be reproduced by any means, be in full or in part, except in short extracts in fair dealing, for research or private study, critical scholarly review or discuss with an acknowledgement, without written permission of the Director of Postgraduate studies, on behalf of both the author and the University of Dar es salaam.

ACKNOWLEDGEMENT

I would like to thank all those who in one way or another made this work possible. Since it is not possible to mention by names all those who participated in this work, the following should not go without being mentioned on behalf of others. I would like to thank Selemani Mbuyita, Yahaya Mkilindi and the Rufiji Demographic Surveillance System (RDSS) field staff for assisting me in data collection. I would also like to thank the District Medical Officer and his staff at all the levels that we visited for their warm and exemplary welcome and participation in the interviews and discussions held. Similar thanks should go to Mr. Abdallah Meza (driver) who tirelessly and without complaints drove us to all required destinations.

I feel strongly indebted to all pregnant women in the RDSS area during the study time who freely agreed to participate in this research.

This work would not have been made possible had it not been the tireless support, guidance and close supervision of Professor Zul Premji. Lastly I feel strongly indebted to Drs. Don de Savigny, Conrad Mbuya, Graham Reid and Harun Kasale of the Tanzania Essential Health Intervention Project (TEHIP) for their encouragement and for enabling me to be sponsored for the course. It goes without saying that Mr. Charles Mayombana had been very instrumental for my performance at my work place and the subsequent development that led the employer to grant permission for being out of my duties for the whole year of my course.

DEDICATION

I dedicate this to my wife and children for their tolerance and keen desire for me to acquire the long desired knowledge and skills for my self-esteem.

ABSTRACT

Tanzania has adapted the Roll Back Malaria (RBM) initiative. This study was set to explore the feasibility of ITNs, intermittent presumptive treatment (IPT) and advocacy and information, education and communication (IEC) as among the selected essential monitoring and evaluation (M&E) indicators for measuring success and problems of malaria control activities in Rufiji district.

Thirty-six health workers from 15 government health facilities were purposefully selected. Indepth interviews and group discussions were held, and community based questionnaire survey was done with 95 pregnant women systematically sampled from the Rufiji Demographic Surveillance System (RDSS) records.

Respondents at all levels of the health facilities mentioned IMCI and ITNs as among health programs implemented in the district. Advocacy IEC was mentioned by only 30% of the district hospital level staff. Intermittent presumptive treatment (IPT) was never mentioned. Again findings showed that 50% of junior staff were not aware of RBM. Over 90% of the senior staff were aware of it and 46% of them obtained information through formal channels, the remaining through informal channels. About 8% and 10% of the health centres and dispensary levels respectively mentioned IMCI training to be the source of information about RBM.

These findings suggest that the information about health programs, like RBM and their significance were not equally diffused among health workers at all levels. It seemed that RBM initiative was static at senior level health personnel.

The survey on the use of sulphadoxine pyrimethamine (SP) for IPT and ITNs among pregnant women was only 22% and 20% respectively.

Inappropriate focus, knowledge and skills of RBM monitoring and evaluation indicators for tracking malaria control activities were mentioned to be a major obstacle for M&E of malaria control activities. Training on RBM among health facility staff at all levels for uniform understanding and effective implementation of M&E of malaria control activities was important.

TABLE OF CONTENTS

CERTIFICATION i
DECLARATION AND COPYRIGHT ii
ACKNOWLEDGEMENT iii
ABSTRACT v
TABLE OF CONTENTS vii
LIST OF TABLES ix
LIST OF APPE NDICES x
LIST OF ABBREVIATIONS xi

CHAPTER ONE 1
INTRODUCTION 1

1.1 Background 1
1.2 Ten Malaria Facts 1
1.3 Malaria eradication and control constraints 3
1.4 Statement Of The Problem 9
1.5 Rationale Of The Study 14
1.6 Broad Objective 16
1.7 Specific Objectives 16
1.8 Research Question 18

CHAPTER TWO 19

2.0 LITERATURE REVIEW 19

CHAPTER THREE 30

3.0 METHODOLOGY 30

3.1 Study site 30

3.2 Sampling 32

3.3 Methods 33

3.4 Data Management and Analysis 35

3.5 Ethical issues 35

3.6 Study limitations 36

CHAPTERFOUR 38

4.0 RESULTS 38

CHAPTER FIVE 60

5.0 Discussion 60

CHAPTER SIX 64

6.0 Conclusion and Recommendations 64

6.1 Conclusion 64

6.2 Recommendations 65

7.0 REFERENCES 66

8.0 APPENDICES 71

LIST OF TABLES

Page

Table 1: Awareness on Health Interventions at Different Levels in the District---------- 41

Table 2: Awareness on RBM Among Health Facility Staff---------- 43

Table 3: Current Used Monitoring and Evaluation Indicators in the District---------- 45

Table 4: Awareness of Using ITNs Among Pregnant Women---------- 48

Table 5: Use of ITNs in the Previous Night Among Pregnant Women----------49

Table 6: An Understanding on IPT as an M&E Indicator for Malaria Control Activities---------- 55

LIST OF APPENDICES

Questionnaire 1A: Awareness and use of RBM indicators (English version)----------71

Questionnaire 2A: Problems related to use and non-use of specific RBM indicators (English version)----------75

Questionnaire 3A: use of IPT by pregnant women (English version)----------82

Focus/group discussion guide 4A (English version)----------85

Questionnaire 1B: Awareness and use of RBM indicators (Swahili version)----------87

Questionnaire 2B: Problems related to use and non-use of specific RBM indicators (Swahili version)----------91

Questionnaire 3B: Use of IPT by pregnant women (Swahili version)----------101

Focus/group discussion guide 4B: (Swahili version) ----------104

Designation codes for health facility staff used (appendix 5)----------106

Rufiji district health workers establishment (appendix 6)----------107

Rufiji District Map A: Divisions and Wards (appendix 7)----------110

Rufiji District Map B: Health facilities and villages visited (appendix 8) ----------111

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CHMT	Council Health Management Team
DALY	Disability Adjusted Life Year
FGD	Focus Group Discussion
HIV	Human Immune Virus
IMCI	Integrated Management of Childhood Illnesses
IPT	Intermittent Prophylactic Treatment
ITNs	Insecticide Treated Nets
KINET	Kilombero Net Project
LBW	Low Birth Weight
MOH	Ministry of Health
NGO	Non Governmental Organization
NMCP	National Malaria Control Program
PHC	Primary Health Care
RAP	Rapid Assessment Procedures
RBM	Roll Back Malaria
RDAHP	Rufiji District Annual Health Plan
RDSS	Rufiji Demographic Surveillance System
RHMT	Regional Health Management Team
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WB	World Bank
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Malaria is a widespread and complex life-threatening parasitic disease transmitted by mosquitoes. Today malaria is endemic in 130 countries; approximately over 40% of the world's population are exposed to the risk of malaria. Malaria causes 300 – 500 million episodes of acute illness and 1.2 million deaths per year (RBM, 2002). The greatest burden is placed upon the population in Africa. Over one million deaths per year in children under-five years in sub-Saharan Africa are attributed to malaria (Nature, 2002).

1.2 Ten Malaria Facts

Malaria kills over one million people each year, about 3000 a day: the majority of victims are children.

- At least 300 million people suffer from acute malaria each year.
- Nine out of ten cases occur in Africa south of the Sahara.
- Malaria is continuing to spread in Africa.
- The cheapest anti-malaria drug, chloroquine, is rapidly losing its efficacy almost all endemic countries.

- Population movements, such as seasonal workers and refugees into malaria endemic regions and countries, are causing major disease outbreaks and impacting on economies.
- Malaria is a major killer of refugees and displaced persons in Africa.
- Effective malaria control has already led to dramatic declines in malaria death rates in Asia.
- Prompt and effective treatment of suspected malaria fever cases could significantly reduce malaria death rates even more if the treatment can be administered in the home.
- The wider use of insecticide – treated bednets may reduce episodes of the illness by 50% in areas of high transmission (RBM/WHO, 2000).

Over the past 30 years malaria – related death rates have fallen in many countries, particularly in the whole of Europe, parts of the former USSR, several countries of Western Asia, much of North America including the whole of USA, most of the Caribbean, large areas of the Northern and South America, Brunei, Hong Kong, Japan, Singapore, Macao and Taiwan, Latin America and Asia (Bruce-Chwatt, 1978). However, little was made to eradicate or control malaria in Africa during the malaria eradication period in the fifties and sixties. As such malaria death rates in Africa kept increasing resulting to grave economic consequences (RBM, 1999).

1.3 Malaria eradication and control constraints

The previous eradication programme and the control methods effort came to an end in the late 1960s due to political, administrative, financial, operational, social and ecological as well as technical constraints (McGregor, and Wernsdorfer, 1988).

Political Constraints

Success of the eradication programme resulted into implementing the programme irrespective of the material circumstances, i.e. without consideration of specific national strategies and targets according to available local resources. For example, massive spraying campaigns to eradicate the vectors to reduce the population of the vectors needed massive spraying which the African governments could not afford and sustain. In-house wall spraying in most of the muddy walls of the poor majority of African houses was a failure exercise for reasons that muddy walls absorbed the insecticide hence making it ineffective. More importantly the global political will, as an important motivating factor for control programmes was not taken into consideration (McGregor, and Wernsdorfer, 1988).

Administrative Constraints

For any programme to succeed, sound administration is required. Failure in malaria eradication programme was attributed to inadequate administrative

practices, this apparently this applied to malaria control programme. The need for a solid administration is felt even more as there may be a tendency to neglect malaria control relative to other health projects. Realistic planning, timely procurement and allocation of funds, continued financial obligations, provision of adequately trained personnel and open as well as a clear two-way communication between and among different levels of implementers is a must thing to be done for smooth running of a malaria control programme. As was often the case during the malaria eradication era, however, not all countries were yet in a position to secure these fundamentals (McGregor, and Wernsdorfer, 1988).

Financial Constraints

Financial resources should always be adequate to the level of malaria reduction goal. This reality was not fully realized at the time when malaria eradication programmes were transformed to control. Fundamentally acceptable malaria control requires substantial financial resources (McGregor, and Wernsdorfer, 1988).

.

Operational Constraints

The science of malaria at the era of eradication was at its infancy. Technicians were trained to use a single method i.e. spraying of residual insecticides on the interior walls of houses because that was believed to be sufficient to interrupt

malaria transmission in most areas except tropical Africa. Interdisciplinary approach was out of their strategies. They did not consider other preliquisite like the bionomics of the mosquito, the biology of the parasite and the several human behavioural, cultural, social and economic factors that contribute so much to the unpredictability of the disease under prevailing local conditions (McGregor, and Wernsdorfer, 1988).

Social And Ecological Constraints

Use of DDT in health programmes was banned at the time of a peak of development of large projects (1970s) such as the construction of dams and irrigation schemes implemented to improve the social well being of the people. That modified the vector habitats resulting into increased transmission of vector born diseases including malaria (McGregor, and Wernsdorfer, 1988).

Technical Constraints

Resistance of P*lasmodium falciparum* to chloroquine (60%) and Sulphadoxine/ Pyrimethamine that has reached 20 (MIM, 2002).

In 1992, WHO convened a Ministerial Conference on malaria in Amsterdam that defined a Global strategy for malaria control and stimulated new efforts to control malaria around the world (Lengler, Cattani and De Savigny, 1996) The basic elements of the global strategies included improved malaria diagnosis and case management and sustainable preventive measures, including vector

control. Insecticide treated mosquito nets (ITNs) were seen as the most suitable for promotion in a primary health care (PHC) approach.

To reinforce the global Malaria Control Strategy, UNICEF in 1998 joined with WHO, UNDP and the World Bank (WB) and launched Roll Back Malaria (RBM), an initiative intended to set up long lasting prevention and control measures (UNICEF, 2000).

Role Back Malaria (RBM) was officially launched in October 1998. It represents a world wide partnership/movement, drawn from malaria affected countries, UN organisations, bilateral development agencies, development banks, non government organisations and the private sector with commitment to working together to significantly reduce by 50% the global malaria burden by the year 2010 and to sustaining reduction thereafter (WHO, 1998). RBM also aims at strengthening country systems to better respond to the challenges of combating malaria and meeting the health requirements of poor people (WHO, 2000).

The identified main objectives of Roll Back Malaria were to significantly reduce the global malaria burden through interventions adapted to local needs and by reinforcement of the health sector as well as ensuring that countries set national goals based on situation analysis and feasibility assessment, while

global targets will be set from aggregated national goals at the end of the RBM preparatory phase.

In 1999 malaria experts met in Durban (South Africa) to advance and revive an international commitment to deal with the serious and growing burden of malaria disease in Africa. The achievement of this meeting was the opportunity of many partners working in co-operation towards a shared goal that could not have been achieved by individual action alone.

RBM in Africa aims to help communities and families reduce the consequences of malaria by contributing to make health systems function better, improve access to quality care for people with fevers, ensuring continued utility of effective and affordable ant malarial therapies, increasing the use of effective protection, especially insecticide treated materials, predicting malaria epidemics and responding effectively when epidemics break out. It is now than ever there is an increased attention towards malaria in general, and in Africa in particular. This is a precious opportunity that must not be lost. Besides RBM, there is Global Fund that was established in January 2002 as a financial instrument complimentary to existing programmes addressing HIV/AIDS, tuberculosis and malaria. The purpose of the Global Fund is to attract, manage and disburse additional resources through a new public-private partnership that will make a sustainable and significant contribution to the reduction of

infections, illness and death. thereby mitigating the impact caused by HIV/AIDS, tuberculosis and malaria in countries in need. The Global Fund will strengthen and reflect high level, sustainable political involvement in making allocations of its resources.

Tanzania has adapted the roll back malaria and is in the initial stage of its implementation. The 1998/1999 Rufiji district annual health plan indicated that malaria ranked first among top ten diseases with 222,336 reported cases. This was 28% of all reported malaria cases in the district. 30% of the total burden of disease of the whole population was driven by acute febrile illness, which was predominantly malaria. Of this, about two thirds was suffered by children under five years. The other important risk group was that of pregnant women. Women of 15-49 years of age carried about 10% of the malaria burden (Rufiji District Annual Health Plan 1998/1999).

Rufiji district health management team (CHMT) identified Integrated Management of Childhood Illness (IMCI) and insecticide treated nets (ITNs) which are broad strategies with an overall objective of contributing to reducing child morbidity and mortality through a range of interventions to prevent illness and reduce deaths from common childhood conditions, and to promote child health and development.

1.4 Statement Of The Problem

The Rufiji district health plans addresses malaria problem through integrated management of childhood illness (IMCI) and insecticide treated mosquito nets (ITNs) interventions, which were among the RBM strategies. Implementation of the interventions commenced at the time of launch of the roll back malaria (RBM) in 1998, as such it was important to assess the practicability of the identified indicators for measuring success of RBM activities in a district that had started to address the problem. It was expected that there could be practical lessons as regards to feasibility of the selected essential indicators for assessing success and problems of malaria control activities. Lessons learned would help implementation of RBM activities towards halving the malaria problem by the year 2010 and the subsequent planned years in the study district and elsewhere.

The Ministry of Health has adopted a minimum set of core monitoring and evaluation indicators that would be monitored and evaluated through household and health facility level surveys. The adopted core indicators included: Case Management (Early diagnosis and treatment) at community level, Improved malaria diagnosis and case management at health facilities, Insecticide Treated Mosquito Nets (ITNs), Malaria in Pregnancy, Epidemic

Prevention and Control, Health Sector Development and Advocacy and Information, Education and Communication.

Key issues for the selected essential monitoring and evaluation indicators for the success of roll back malaria that the districts are expected to show include:

(i) Case Management (Early diagnosis and treatment at community level)

Under this indicator the district is expected to have data that show the proportion of children under five years of age in the previous two weeks with fever/malaria who got the correct treatment according to the national guidelines within 24 hours of fever onset. Other important information include the proportion of drug stores, retail shops and kiosks selling only quality assured antimalarials in the district according to the National treatment guidelines. Lastly, the district is expected to show data on the proportion of the informal sector service providers (shopkeepers, traditional healers) who are offering antimalarial treatment according to the national treatment guidelines.

(ii) Improved malaria diagnosis and case management at health facilities

As regards to this indicator the district is expected to possess information on the proportion of children under five years of age presented at the health facilities, with uncomplicated malaria managed according to the national malaria treatment guidelines. In addition the district data should indicate the proportion of cases diagnosed as severe malaria managed according to the

National malaria treatment guidelines. Other relevant information will be the proportion of health facilities able to confirm malaria diagnosis according to the national malaria treatment guidelines and the proportion of inpatients diagnosed of severe malaria that have had a blood slide taken, likewise the proportion of health facilities reporting no disruption of stocks of antimalarial drugs for more than seven days during the previous three months.

(iii) Insecticide Treated Mosquito Nets

What is looked at as far as ITN, as an indicator, is concerned is the proportion of children under five years sleeping under an ITN, treated within the last three, six or twelve months on the preceding night, proportion of pregnant women sleeping under an ITN, treated within the required time on the preceding night so does the proportion of pregnant women aware of the importance of sleeping under a regularly treated net, proportion of hamlets having at least one outlet selling ITN commodities and the proportion of households having at least one ITN.

(iv) Malaria in Pregnancy

Malaria in pregnancy is one of the monitoring and evaluation indicators for malaria control activities. The most important aspect the district is expected to show here is the proportion of pregnant women who have taken Intermittent

Prophylactic Treatment (IPT) according to the National malaria treatment guidelines.

(v) Epidemic Prevention and Control

This indicator is measured at national level whereby data on the proportion of malaria epidemic prone districts having a functional system for early detection of epidemics is determined. Other aspects are the proportion of malaria epidemics detected within two weeks of onset and properly controlled, number of epidemic sentinel sites regularly reporting on malaria situation and proportion of epidemic prone districts that have stocks of supplies and equipment for epidemic control as well as the proportion of epidemic prone districts with personnel who can analyse, interpret and manage data related to epidemic preparedness and control.

(vi) Health Sector Development

What is looked for under this indicator embraces the proportion of districts with comprehensive districts health plans that are consistent with MMTSP, the proportion of districts using locally collected data for planning of health services, the proportion of districts that have a focal person on malaria control activities within CHMT and the proportion of CHMT, RHMTs, NGOs and donors receiving and using NMCP guidelines, policy papers and newsletters

(vii) Advocacy, Information, Education and Communication

The significant features of Advocacy, Information, Education and Communication as a monitoring and evaluation indicator contain the proportion of antenatal clinic staff trained on IPT for pregnant women and proportion of mothers/caretakers able to recognize signs and symptoms of danger of a febrile disease in a child less than five years of age.

1.5 Rationale Of The Study

In Tanzania malaria is the highest disease burden accounting for 49% of the under five years admissions; 34% of death occurring in under five years admitted in health facilities and accounts for 24 - 49% of outpatients in all 20 regions in Tanzania mainland (MOH, 1999).

In 1998/1999 malaria ranked first among top ten diseases with 222,336, (28%) of all reported malaria cases in Rufiji district, and 30% of the total burden of disease of the whole population was driven by acute febrile illness, which was predominantly malaria. Of that, about two thirds was suffered by children under five years and the other important adult risk group of pregnant women. Women of 15-49 years of age carried about 10% of the malaria burden (Rufiji District Annual Health Plan 1998/1999). Rufiji district seems to be advantaged in terms of malaria control strategies for reasons that it had some necessary inputs like the Integrated Management of Childhood Illness (IMCI) and the use of ITNs interventions, presence of demographic surveillance system and a research component on household health seeking behaviour, yet it was not known to what extent the district keep plans to control malaria took aboard data from this sentinel site neither the essential monitoring and as well monitoring and evaluation indicators for assessing success of malaria control activities they planned for.

With the objective of reducing malaria mortality and morbidity by half by the year 2010, Tanzania has adopted the Roll back Malaria strategy as a World Health Organization (WHO) member state. The Roll Back Malaria strategy is included in the national malaria control program (NMCP) planning. As a program it needs inbuilt constant effective monitoring and evaluation system to measure its progress and success. In line with Roll Back Malaria, it is thus necessary to explore/investigate the feasibility of malaria indicators, which can be used to monitor the NMCP activities as well as monitor the success of Roll Back Malaria in Sub-Saharan Africa. Since Roll Back Malaria was adopted national wide, it was necessary to adopt and adapt indicators that would be used by all districts irrespective of their variability.

Monitoring and evaluation of the activities would provide stakeholders with better means for learning from the past experience, improve service delivery, planning and allocating resources, and demonstrate results as part of accountability to key holders.

Due to limited time, resources and the nature of the expected study respondents who used their time in providing health services to patients who seemed to overwhelm the service providers, this study was done as planned before and focused on the practicability of three essential monitoring and evaluation indicators as listed here below:

- Insecticide Treated Mosquito Nets (ITNs).
- Malaria in Pregnancy.
- Advocacy, Information, Education and Communication.

It was anticipated that research findings would Information, Education and Communication provide practical experience, evidence and guidance for improvement of malaria control activities in the district and elsewhere in the country.

1.6 Broad Objective

The broad objective of this study was to determine the feasibility of using the selected roll back malaria (RBM) monitoring and evaluation indicators for measuring malaria control activities at the Rufiji district.

1.7 Specific Objectives

- To determine the burden of malaria in the district over the past five years.
- To determine the awareness of the council health management team (CHMT) members and the health facility staffs on the existence of monitoring and evaluation indicators for RBM activities.
- To determine which indicators are in use currently and to what extent do they reflect success or failure of malaria activities in the district?

- To explore problems (factors) related to use or non-use of the study selected RBM indicators from the district perspective.

1.8 Research Question

Are the Selected Roll Back Malaria monitoring and evaluation indicators appropriate and practicable to reflect the success or failure of malaria control activities in Rufiji district, given the fact that almost all of the population (about 99.5%) are poor peasants, most of them have no permanent residence, while the district internal roads are not passable throughout the year, and that the delta villages can only be reached by motorboats or dhows and dug canoes only, and more important when the district is in serious shortage of qualified health facility staff?

CHAPTER TWO

2.0 LITERATURE REVIEW

In fact, the mosquito-borne disease; malaria remains a major cause of burden of disease worldwide. Statistics show that about half of the world's population is at risk of being infected with malaria parasites (WHO, 1996). Over 300 million cases of malaria are estimated each year resulting in more than a million deaths. 90% of these deaths occur in Africa South of Sahara and 71% of all deaths from malaria are in children under the age of five years (Jamison *et al.*, 1993; MIM, 2002). The World Bank ranks malaria among the leading cause of loss of disability adjusted life year (DALYs) contributing about 35 million future life years lost in Africa (World Bank, 1993) and in 1998, Sub-Saharan Africa was estimated to account for 34 million out of the world-wide figure of more than 39 million future life-years lost from disability and premature death (WHO, 1999).

Pregnant women suffer decreased immunity to malaria quadrupling their chances of contracting malaria and doubling their risk of death. Among pregnant women, malaria causes severe anaemia, miscarriages, stillbirths and death. It is a major contributor of to the world's high rates of maternal mortality and also accounts for 30% of preventable low birth weight among newborn

infants and intrauterine growth retardation. Babies born with low birth weight are in return much less likely to survive their first year of life (UNICEF, 1999).

In malaria endemic countries people are caught in a vicious circle of disease and poverty. Impoverished countries suffer the most from malaria and the disease is a contributing cause of their poverty. In Africa for example, a worker suffering a bout of malaria will lose 10 working days on average. The disease costs countries in this region more than 1% of their gross domestic product (GDP) and about 10% of their expenditure on health (UNICEF, 1999)

In these affected countries, children suffer an average of six bouts each year, making malaria the most common cause of school absenteeism. In some areas, more than one third of primary school children have had malaria in a single school term, each child typically missing a week of school (UNICEF, 1999).

In Tanzania malaria is the heaviest disease burden accounting for 49% of the under five years admissions; 34% of deaths occurring in under five years admitted in health facilities and it accounts for 24% - 49% of outpatients in all 20 regions in Tanzania mainland (MOH, 1991). Malaria is directly and indirectly responsible for 40,000 deaths annually, or 120 every day (KINET project, 2001).

Until recent years, the world relied primarily on the use of standard insecticides and antimalarial drugs such as chloroquine to control malaria. Between 1955 and 1969, malaria eradication campaigns dramatically reduced or eliminated the disease in Northern America, Southern Europe, the former Soviet Union and some territories of Asia and South America. (Spraying DDT in homes and in mosquito breeding sites and to treat infected individuals (UNICEF, 1999)).

These malaria control and eradication programmes in the past were based on the assumptions that the relationship between the parasite, the vector and human was clearly understood by local population and that antimalarial drugs and insecticide were available and effective. These assumptions were rarely correct and the situation changed very little (Gessler, *et al.,* 1995) from global point of view. Moreover little was done to eradicate or control malaria in Africa during the malaria eradication period mentioned above due to several reasons like presence of favourable environment for the vector to propagate, inappropriate model of eradication or control programmes that were successful, like large expensive spraying campaigns to eradicate the vectors to reduce its population to a level where transmission will be negligible would have needed massive spraying which the African governments could not afford and sustain. More importantly the political will, as an important motivating factor for control programmes, was not taken into consideration. Malaria

In 1979 the Commonwealth Regional Health Secretariat, based at Arusha, organised a workshop in Dar es Salaam for all countries of East Africa on other possibilities of controlling malaria through an integrated approach. This was another attempt by concerned authorities to address the problem of malaria in Tanzania.

Between 1984 and 1986 the MOH in collaboration with the Dar es Salaam and Tanga urban councils, conducted a small-scale pilot project with the aim of promoting environmental sanitation through community participation, as a malaria control measure in urban areas. In 1987 the MOH opened a postgraduate health officers vector control-training center in Tanga, with emphasis on malaria vector control. Towards 1990s the government of Tanzania through a grant from Japan, started an urban malaria control program in Dar es Salaam and Tanga.

From the above efforts, it will be realized that mosquito control in Tanzania has been mainly confined to urban areas. The programs have been mainly confined to urban areas. Most the programs were vertical. Recently the national malaria control program has been revived in the country in order to strengthen clinical services, improve information, education, and communication, to promote vector control with emphasis on personal protection, source reduction, and treatment through community support (Malaria and Development in Africa, 1999).

By 1990s, malaria had moved up on the world's health care agenda. In 1992, WHO convened a Ministerial Conference on malaria in Amsterdam to define a Global strategy for malaria control and stimulate new efforts to control malaria around the world (Lengler, Cattani and De Savigny 1996). The strategy emphasized early diagnosis and treatment of all malaria cases, personal protection measures, including the use of insecticide-treated mosquito nets, mosquito coils, repellents and other materials; early detection, containment and prevention of malaria epidemics; and strengthening of local capacity to monitor malaria in affected regions.

By mid 1997, 47 out of 49 of malaria endemic countries in Africa had completed national plans of action for malaria prevention and control. Worldwide, over 90% of affected countries are at various stages of implementing malaria control programs.

As a response to RBM objective, a team of experts from the Ministry of Health (MOH), High Learning Institutions, Non-Governmental Organizations (NGO) and Private Sectors in the country recently met as a monitoring and evaluation (M&E) team of RBM in order to establish a functional system at national, district and community levels for measuring changes in malaria morbidity and mortality. The meeting premeditated and agreed to set a minimum set of core indicators that would monitor RBM through household and facility level

surveys. The core indicators agreed include: Case Management (Rapid/early diagnosis and treatment) at community level, Improved malaria diagnosis and case management at health facilities, Insecticide Treated Mosquito Nets (ITNs), Malaria in Pregnancy, Epidemic Prevention and Control, Health Sector Development, and Advocacy and Information, Education and Communication.

For logistical reasons, time and financial constraints, this study has examine the feasibility of three selected essential indicators for monitoring and evaluation of roll back malaria activities in Rufiji district. These include:

1. Insecticide Treated Mosquito Nets (ITNs)

Most malaria transmitting mosquitoes bite at night. Mosquito nets, if properly used and maintained, can provide a physical barrier between the vector and the host. If treated with insecticide, the effectiveness of nets is greatly improved. The roll back malaria global partnership promotes the use of ITNs for every one at risk of malaria, especially children and pregnant women. Tanzania, where 100 children were dying every day from malaria, is now taking a lead in the fight to roll back the disease through the use of ITNs. In two rural districts, a three-year pilot campaign to promote the use of ITNs has seen the proportion of infants sleeping under the nets rise from 10% to more than 50%. Over the same period, the child death rate has fallen by more than a quarter and the proportion suffering from anaemia by almost two thirds. Tanzania has

now taken up the challenge of going to scale and was the first African country to remove taxes on mosquito nets (WHO and UNICEF 2003).

The Heads of State and Government of African countries, meeting in Abuja, Nigeria in April, 2000, committed themselves to an intensive effort to halve the malaria mortality for their countries and resolved to initiate appropriate and sustainable action to strengthen the health systems to ensure that by the year 2005, at least 60% of those at risk of malaria, particularly children under five years of age and pregnant women, benefit from the most suitable combination of personal and community protective measures such as insecticide-treated mosquito nets and other interventions which are accessible and affordable to prevent infection and suffering (WHO/CDS/RBM/2000. 17).

2. Malaria in Pregnancy

Malaria infection during pregnancy is a major public health problem in tropical and subtropical regions throughout the world. In most endemic areas of the world, pregnant women are the main adult risk group for malaria. In areas of epidemic or low (unstable) malaria transmission, maternal death may result either directly from severe malaria or indirectly from malaria related severe anaemia. In addition, malaria infection of the mother may result in a range of adverse pregnancy outcomes, including spontaneous abortion, neonatal death, and low birth weight (LBW).

In areas of Africa with stable malaria transmission, *P. falciparum* infection during pregnancy is estimated to cause as many as 10,000 maternal deaths each year, 8% to 14% of all low birth weight babies, and 3% to 85 of all infant deaths.

The promising news is that during the past decade potentially more effective strategies for the prevention and control of malaria in pregnancy have been developed and demonstrated to have a remarkable impact on improving the health of mothers and infants.

In areas of stable *P. falciparum* transmission, prevention of a symptomatic malaria infection through a two-pronged approach of IPT and ITNs result in the greatest health benefits (WHO/CDS/RBM/2000.17). Insecticide treated mosquito nets can protect pregnant women, and the same net can be used to guard the life of the newborn baby. In 2003, fewer than 10% of women sleep under any kind of mosquito net. Secondly, Intermittent Preventive Treatment (IPT) – a dose of an antimalarial given twice during pregnancy- is a proven, cost effective, and under-used means of preventing malaria. It can be administered through the antenatal clinics that are already attended by two-thirds of African women. The availability of both the treatment and a means of delivery is an opportunity to protect the 30 million at-risk women who become pregnant each year (www.rbm.who.int March 2003).

3. Advocacy, Information, Education and Communication

To promote the use of ITNs, RBM is working to organise public education campaign in malaria endemic areas, lobby for reduction or waiver of taxes and tariffs on mosquito nets, netting materials and insecticides, stimulate local ITNs industries and social marketing schemes so that nets are available at a price everyone can afford and capitalize on the potential of newly developed long-lasting treated mosquito nets.

The other important activity RBM needs to strive on is the provision of health education and communication to schools, work places, and parents, especially mothers and persons caring for young children, on the recognition of malaria and to improve capacity for treatment at the home and for recognizing when to seek assistance for severe cases. Others include establishing guidelines for management of malaria and other priority diseases by health personnel at all levels.

Sensitization of the population and promotion of preventive measures, such as house screening, and development of a 'net culture' and other measures such as environmental management, to support and encourage environmental measures taken by families and communities to reduce mosquito-breeding sites and promote the use of malaria preventive measures such as

chemoprophylaxis and/or presumptive intermittent treatment for pregnant women especially those in their first pregnancies, are the prime motives of Advocacy, Information, Education and Communication indicator.

Given the fact that RBM strategy is included in the national malaria control program (NMCP) planning, then there is a great need as a program, to have an inbuilt constant effective monitoring and evaluation system to measure its success and problems. Therefore this study will investigate the feasibility of using selected essential monitoring and evaluation indicators for tracking success and problems of malaria control activities in the district.

CHAPTER THREE
3.0 METHODOLOGY

3.1 Study site

Rufiji district is one of the six districts of the coast region, its headquarter Utete is situated 200 kilometres south of Dar es Salaam. Administratively, the district is divided into six divisions, nineteen wards and ninety-four villages. The district is largely rural with a population of about 182,000 (85,000 people (47%) are under Demographic Surveillance System). The mean household size for the whole district is about 5 persons (Bureau of statistics, 1991). Over half of its area of 13,339 (58.3%) squire kilometres is covered by forest reserve. Rufiji River that the district owes its name, divides the district geographically into two equal halves from West to East. The district can be divided into four geographical zones namely Northern plateau (North of Rufiji river), Southern plateau (South of Rufiji river), flood plains (which are situated on either side of the river, ranging between 10 – 25 km. Wide) and the coastal and delta zone. In this zone there are 16 islands with 23 villages halves. The prominent ethnic groups are the Ndengereko, Nyagatwa, Ngindo, Matumbi, Makonde and other small ethnic groups. Kiswahili (a national language) is widely spoken. Majority of the population (about 99.5%) are peasants practicing subsistence farming. Major crops grown include cassava, maize, rice, millet coconuts and cashew nuts. Fruits like oranges, mangoes and pineapples. Some residents are

involved in fishing and others in small-scale commercial activities such as selling wood products like timber and furniture. Farming areas are often located some distance from the family home and make use of periodically flooded alluvial soils. A temporary raised house located in farms connotes a four or five months geographical split from the main village. Some households move with all of their family members to the farms and stay there until harvest period. Income per capital in the district is said to be difficult to measure, but it was estimated to be Tshs. 123,073.00 for the year 2000. The district internal roads are not passable throughout the year. It is estimated that over 40% of the district is passable during the rain season (April-June). Delta villages can only be reached by motorboats or dhows and dug canoes only. *(See the study site map Appendix 7).*

The district has 56 health facilities. They include 2 hospitals (one government and one mission), 4 government health centres and 48 government dispensaries. Some people still continue obtaining services from traditional healers. According to contemporary district comprehensive annual health plan of 2002/2003, the district has a total of 155 health staffs of different categories against the actual required number of 547. Without doubt the district was experiencing a big shortage of health personnel. There are only 30 health staffs at the district hospital. About 44 health staff different cadres were required at the district hospital. Health centres had only 57 staff against the required 185. The dispensaries were most affected by the shortage of staff

since only 68 staff instead of 288 manned them. Unqualified staffs manage over fifty percent (50%) of the health facilities in the district. Generally the communication network is poorly served. There is only a single line that operates 24 hours, and this one is connected to the District Commissioner residence. The district also have a two way radio communication at the district hospital and six health facilities including a Radio E-mail service installed at Utete District Hospital as part of the Tanzania Essential Health Intervention Project package.

3.2 Sampling

Through convenience sampling, a total of fifteen (15) government health facilities were visited as planned in Rufiji district. These included the only district hospital situated at Utete, four health centres (100%) and ten dispensaries (20.8%).

Purposeful selection of 36 health workers from the mentioned government health facilities was done. At the district hospital, thirteen members of the health management team (CHMT) and other health staff involved in making a comprehensive district annual health plan were also included. It was anticipated that such staff were conversant with the interventions they planned for.

Thirteen respondents were selected from the health centres. These included all heads of the respective health centres and their immediate subordinates. The remaining ten respondents were heads of the dispensaries.

A total of 95 pregnant women from 16 villages from the Rufiji Demographic Surveillance System (RDSS) records were selected after systematic sampling. Permission to use the demographic surveillance data was obtained from the project leaders. *(For visual details see captioned Map in Appendix 8)*

3.3 Methods

Indepth interviews to determine the awareness of the government health facilities on the existence of RBM selected essential indicators for measuring success and problems of malaria control activities were done with all thirty six respondents at all levels of health facility, likewise to determine which indicators were currently used and to what extent they reflect success or failure of malaria control activities. In addition, factors related to use and non-use were explored from them.

Three group discussions were held with health facility staff of which one was done with staff at district hospital and the other two with staff at Nyaminywili and Kibiti health centres. The intended focus group guide was used for group

discussions. A community-based questionnaire survey was also conducted to explore IPT and ITN usage among pregnant women.

Secondary source of information (existing written records) was also used to determine the magnitude of malaria problem in the district and to track the trend of the proportion of the District health budget allocated to malaria control activities over the past five years. Important elements that were looked for to determine the burden of malaria problem over the past five years were:

- Mortality attributed to malaria (all ages)
- Mortality attributed to malaria (under five)
- Morbidity attributed to malaria (all ages)
- Morbidity attributed to malaria (under five)
- Case fatality rate (under five)

Focus group discussions (FGDs) were not done as planned before due lack of required number of participants and other necessary qualities for a focus group to be done. Instead, three group discussions were done.

It was unfortunate that the research was done at a time when most of the required participants were either busy attending seminars or others involved in field activities with other vertical programs. They were occasionally in and out. It was possible do group discussions with those who remained to provide

health service at the facilities. Discussions were held after all outpatients were attended.

3.4 Data Management and Analysis

Data management began with a brief training of the selected field assistants to maximize the quality of the data collected. We went through all the instruments for better comprehension. Corrections were made and data collection activities started. Despite the fact that I had to collect data on myself, I still managed to do some supervision to ensure that accurate, complete and detailed data was collected. For the group discussions held the brief field notes were expanded on the same day. For open-ended questions data coding was done. All data was entered into computer followed by cleaning and analysis using Epi-Info version 6 software,.

3.5 Ethical issues

A letter to the District Medical Officer was written by the Institute of Public Health of the Muhimbili University College of Health Science to introduce me and inform the DMO about the study that was going to be carried in the government health facilities. The DMO was requested to give his consent and cooperation during the study time. The DMO again wrote an introductory letter to the lower level health facilities requesting them to give me the maximum

cooperation. The other letter was written to local authorities requesting them to offer the required assistance.

Informed consent was requested from individual respondents after a thorough explanation of the objectives and on what was expected of them before commencement of the interview or discussion. A right to reject was also explained.

3.6 Study limitations

This study was done in June. This coincided with the end of the government financial year whereby most of health facility staffs were busy attending workshops, seminars and other numerous adhoc activities. Some of them were on and off. Others were not available up to the time we left. This had some implications in getting the required respondents at an appropriate time. Some of the important documents as a secondary source of information could neither be found nor traced. Some of the reports were incomplete or improperly recorded.

Re-visiting or sometimes tracing respondents where they were or waiting for them to come back was a solution applied. Pregnant women were traced in the evening or in the second or third day.

Focus group discussions could not be done because we failed to get the minimum required number of participants to warrant the focus group discussion; hence group discussions were held in its place.

Pregnant women were also not easily available for one reason or the other. Some were still in their farmhouses and others had gone elsewhere for different reasons. These were followed up either in the evening of the same day or the second day after dropping a message.

Some health facility staff demanded payment for either being interviewed or participating in the group discussions. This problem was solved by clearly explaining again the objective of the study and that there was no money intended to pay respondents. Failure of the health facility staff to recall some health programs implemented in the district as well as the proportion of the budget that was allocated to malaria control activities were among the setbacks this research faced.

CHAPTER FOUR

4.0 RESULTS

One of the objectives of this study was to determine the burden of malaria in the district over the past five years. This was done through examining the district health plans and key informant interviews. Malaria was found to be the leading health problem with an average of above 100,000 reported cases (28%) of the reported top ten outpatient diseases (Rufiji District Health Plans, 1998-2002). Mortality due to malaria in all age groups was found to be 12.5% in 1999 and 18% in the year 2000. Again, this study indicated that the under-five mortality rate was 24.5% in 1999 and 27.4% in the year 2000.

Morbidity due to malaria in all ages was reported to be 37% in the year 1999, while that of 2000 was 34.5% and in the year 2001 was 37.4%. Morbidity among under fives was 42.6% (1999), 45.8% (2000) and 28.6% (2001). Available records on case fatality rate for the year 1999 was 1% for children under five years while that of the children above years was 0.5%. Again through convenience sampling, a total of fifteen (15) government health facilities were visited as planned in Rufiji district. These included the only district hospital situated at Utete, four health centres (100%) and ten dispensaries (20.8%). Purposeful selection of a total of 36 health workers from the mentioned government health facilities was done. At the district hospital,

members of the health management team (CHMT) and other health staff involved in making a comprehensive district annual health plan were also included. They were thirteen in total. It was anticipated that such staff were conversant with the interventions they planned for. The other thirteen respondents were selected from the health centres. These included all heads of the respective health centres and their immediate subordinates. Similarly heads of the dispensaries were selected. Indepth interviews were done with all mentioned respondents.

Three group discussions were held with health facility staff of which one was done with staff at district hospital and the other two with staff at Nyaminywili and Kibiti health centres.

A community based questionnaire survey was also conducted to explore whether IPT usage was a feasible indicator of RBM. A total of 95 pregnant women from 16 villages from the Rufiji Demographic Surveillance System (RDSS) records were selected after systematic sampling. Permission to use their data was obtained from the project leaders.

The RDSS approach involves a continuous monitoring of about, 17,057 households and 80,024 members or residents of the households in the study area. The RDSS collects information on demographic, household, social-

economic and environmental characteristics of the population. Verbal autopsies are conducted to determine cause of death. One of the objectives behind establishment of the demographic surveillance system was to assist the council health management teams, policy makers and planners to make appropriate resource allocation aimed at improving the health situation in the district and the country at large.

Health facility workers awareness on the existence of monitoring and evaluation indicators for Roll Back Malaria activities

Currently the most mentioned health programs implemented in the district were IMCI, ITNs, TB/LEPROSY, STI/HIV/AIDS and IMMUNIZATION. Others included health service delivery improvement, advocacy, IEC, safe motherhood initiative and reproductive health and environmental hygiene and sanitation. The significance of these health programs varied according to the level of the facility in question (Table 1).

Table 1: Awareness on Health Interventions at Different Levels in the District

Health Interventions Implemented	District Hospital		Health Centre		Dispensary	
	No	%	No	%	No	%
IMCI	13	100	9	69	7	70
ITNs	11	85	9	69	4	40
TB and Leprosy	10	71	7	54	4	40
STI/HIV/AIDS	9	69	9	69	4	40
Immunization	9	69	6	46	2	20
Health Services Improvement	5	38	3	23	2	20
Advocacy	4	31	1	8	0	0
Safe Motherhood /MCH	2	15	1	8	3	30
School Health	3	23	0	0	0	0
Environmental Health	2	15	1	8	1	10

An average of 73% of the respondents from the district hospital and the health centres mentioned improving delivery of health services and reduction of mortality in the district as the major reason for implementing the health programs while 80% of the dispensary level shared similar reason. A lower percentage of the respondents (31%) at the district hospital stated that such programs were implemented as a requirement of the national health policy.

At all levels, all the respondents mentioned malaria as a problem that is being addressed by the district authority and was given a first priority among health programs implemented in the district. Not withstanding the awareness about malaria the strategies adopted for malaria control were however, not uniformly understood.

Concerning the RBM initiative, 92% from the district hospital, 46% from the health centres and 50% at the dispensary level were aware of the RBM

The source of information about RBM varied. At the district level 46% obtained information through seminars, workshops, meetings and research activities carried within the district. The remaining got the information through informal channels, i.e. word of mouth, reading leaflets etc. Only 7.6% of the respondents at the health centres were aware of RBM initiative through the formal channels, (meetings, workshops etc.) while no one at the dispensary level received information through these formal channels. However, 10% of respondents at the dispensary level knew about RBM through IMCI training.

It was observed that RBM initiative is static at senior level health personnel. Junior staffs were not aware of it. While 90% of the senior staffs mentioned to be aware of the program, only 54% of the junior staffs had heard about it (Table 2).

Table 2: Awareness on RBM Among Health Facility Staffs

If ever heard about RBM	Senior Staff (n=10)		Junior Staff (n=26)		Total (n=36)	
	No	%	No	%	No	%
Yes	9	90	14	54	23	64
No	1	10	12	46	13	36

Monitoring and evaluation indicators for the RBM initiative were also explored. The following indicators for RBM, are currently used in the district:

1. Sale of insecticide treated mosquito nets (ITNs) and insecticides

All government health facilities receive ITNs and insecticides consignments from the district and sell them to the community at large.

All the sales records are kept in a special register. These sales records are used to reflect malaria control activities. Increase in ITNs and insecticide sales are taken as a success in malaria control activities.

2. Health care facility records (hospital based data)

This was reported to be the common monitoring and evaluation indicator currently used to reflect success or problems of malaria control activities. Outpatient attendance and deaths due to malaria are recorded. This is in line

with health management information system referred as MTUHA. Decreased number of malaria cases and deaths is used to denote success of malaria control activities. Use of such indicator might be deceiving for reasons that not all with malaria attend the formal facilities.

Community awareness campaigns

Few respondents mentioned community awareness is used as an indicator for monitoring and evaluation of malaria control activities currently. This was considered to be an indicator by counting the number of community sensitization meetings to promote the use of preventive measures, such as ITNs through drama done by professional groups from Dar es Salaam as well as provision of health education to mothers attending maternal child health clinics on importance of environmental management in order to reduce mosquito-breeding sites

Table 3: Current Used Monitoring and Evaluation Indicators in the District

Monitoring and Evaluation Indicators	District		Health Centre		Dispensary	
	No	%	No	%	No	%
Trend of ITNs and insecticide sales	8	62	4	31	0	0
Records on Malaria cases including mortality	6	46	6	46	2	20
Community awareness	2	15	2	15	1	10

A question was put forward as to the reason why indicators for monitoring and evaluation should be used. At the district level 62% mentioned that the indicators are used to reflect success or failure of the programs and that the information can be used to improve health services delivery. The rest were not aware of monitoring and evaluation. However, at the health centre and dispensary levels, all respondents did not know the reasons for monitoring and evaluation.

Use of anti-malaria drugs during pregnancy (IPT) as an indicator for monitoring and evaluation of RBM activities

Malaria infection during pregnancy is a major public health problem in malaria endemic regions. Pregnant women comprise a vulnerable group. Malaria infection of the mother may result in a range of adverse pregnancy outcomes, including spontaneous abortion, neonatal death, and low birth weight (LBW). The national guideline for malaria diagnosis and treatment recommends that women should attend antenatal clinic at the beginning of their second and third trimesters for Intermittent Presumptive Treatment with Sulfadoxine Pyrimethamine (SP) and should also be advised to sleep under Insecticide Treated Nets (ITNs) at night and to take other personal protective measures to reduce contact with mosquitoes. Treated mosquito nets can protect pregnant women, and the same net can be used to guard the life of the new- born baby. In Rufiji district IPT is implicitly used, however it is not used as a RBM indicator.

This survey indicated that of the 95 pregnant women interviewed 78% were married while 15% were single and the remaining 7% were cohabiting. On parity, of the 95 pregnant women 28% were primi-gravida, 16% were seco-gravida and the remaining was multi-gravida. As far as the literacy rate of the respondents is concerned, 44% had no formal education, 51% had completed primary schooling and the remaining 5% had post primary education.

The survey showed that (91%) of pregnant women attended antenatal health care, 9% did not attend. Those with the gestation age between 7 to 9 months had attended more than twice. Most of them (56%) receive their antenatal health care at the public health facilities, whilst 31% received it from private health facilities. The remaining 13% consulted traditional practitioners or those with experience and some did nothing.

About 65% of pregnant women admitted to have taken special medicine to prevent illness during their current pregnancies; while 35% did not take any special medicine. Results showed that 59% of pregnant women took ferrous sulphate during pregnancy. While Only 22% of pregnant took sulphadoxine pyrimethamine (SP) to prevent malaria during pregnancy. Responding to the question on how often did they take the anti malaria drug, about 70% mentioned to have taken only once, 17% reported to have taken the drug twice and the other 13% took three times. Of the 22 pregnant women who took antimalarial drugs, 87% pointed out that they took three tablets.

Proportion of pregnant women aware of the importance of sleeping under a regularly treated net is one of the aspects used for monitoring and evaluation of malaria control activities. Findings showed that there is no difference on awareness of the importance of sleeping under treated mosquito nets among those who have not been to school and who had completed primary school

schooling. 71% of pregnant women who had never been to school were aware of the importance of sleeping under treated mosquito nets, while 67% were those who had completed primary level of education. For those above primary level of education all of them knew the importance of sleeping under treated mosquito nets (Table 4).

Table 4: Awareness of Using ITNs Among Pregnant women

	Not to school (n=42)		Primary education (n=48)		Above primary education (n=5)		Total (n=95)	
	No	%	No	%	No	%	No	%
Yes	30	71	32	67	5	100	67	71
No	12	29	16	33	0	0	28	29

The common reasons provided by pregnant women for sleeping under insecticide treated nets were to prevent against malaria (44%). The other reason mentioned was to get away with mosquito nuisance (22%).

The national guideline for malaria diagnosis and treatment stresses that women should be advised to sleep under Insecticide Treated Nets (ITNs) at night and to take other personal protective measures to reduce contact with mosquitoes. This is important in order to protect pregnant women and to guard

the life of the new- born baby. The study has shown that only 20% of the pregnant women interviewed slept under the net in the previous night (Table 5). Education of the respondent was statistically insignificant (p = 0.2250) to using ITNs.

Table 5: Use of ITNs in the Previous Night Among Pregnant Women

	Not to school (n=42)		Primary education (n=48)		Above primary education (n=5)		Total (n=95)	
	No	%	No	%	No	%	No	%
Yes	7	17	9	19	3	60	19	20
No	35	83	39	81	2	40	76	80

The percentage of nets treated with insecticide is among the important aspects to be considered in monitoring and evaluation of malaria control activities as adopted by the national malaria control program. The research done among pregnant women who happened to have and used the nets in Rufiji district, only about 13% of their nets were retreated.

Problems Related To Use and Non – Use Of Specific RBM Selected Study Indicators

The ministry of health (MOH), Tanzania, has adopted a set of RBM core indicators that would be monitored for malaria control activities. For logistical reasons, time and financial constraints, this study examined the feasibility of

three selected essential indicators for monitoring and evaluation of roll back malaria activities in Rufiji district. These are insecticide treated nets, malaria in pregnancy (IPT) and advocacy information, education and communication.

Insecticide Treated Nets (ITNs)

Respondents at all levels of the government health facilities involved in this study were aware that the district was implementing the national policy for insecticide treated nets promotion. Insecticide treated nets were mentioned by 75% of the district health facility level personnel as one of the monitoring and evaluation indicator of malaria control activities in the district, while Over 19% were not aware if ITNs were used as a monitoring and evaluation indicator for malaria control activities. At the district hospital level, 92% of the respondents were members of the district health planning process.

Given that respondents mentioned ITNs to be used as a monitoring and evaluation indicator for malaria control activities, an attempt was made to explore whether there were problems in using this indicator. A number of problems were mentioned. Of the 36 respondents at all health facility levels, 60% mentioned that there had neither been formal guidelines nor training on using ITNs as an indicator. This problem was repeatedly mentioned in the discussion groups held. Lack of proper records of ITNs and insecticide sales as well as formal follow up of usage of the purchased nets by the vulnerable

groups (pregnant women and children under five years) was another problem that was mentioned by more than 28% of the respondents.

Participants during group discussion pointed out that difficulties of using ITNs as an indicator were due to the current net and insecticide distribution system whereby nets and insecticide sales by health facilities were being sold to any one who came to purchase even if the customer was a non-resident of the community. Such a system is a hindrance for monitoring and evaluation of malaria control using ITNs as an indicator. Some sales of the nets and insecticides go into the hands of people outside the district/people who cannot be monitored e.g. temporary workers on the Rufiji bridge construction could buy ITNs thus inflate the sales. This poses a challenge for monitoring and evaluation exercise.

In a group discussion with health facility staff held at Nyaminywili health centre, participants were of opinion that ITN sales may be a proxy indicator, which is unreliable. They further suggested that usage pattern and re-treatment of ITNs may be better indicators.

Over 33% of respondents interviewed at all levels of health facilities mentioned that inability of majority of community members to purchase nets and insecticides was another challenge to using ITN as a monitoring and evaluation

indicator for malaria control activities. In an informal discussion at the district hospital, some participants pointed out that unless a great majority of community members were economically better and equally informed about the usefulness of using ITNs, then ITN could be a useful indicator for monitoring and evaluation of malaria control activities in the district. They said they had ITN as an intervention for the past five years but the coverage was still low although they could not tell exactly how low the net coverage is against the expected one.

However, data from Rufiji DSS showed that of the total 17061 households registered in the RDSS area, only 4092 households (24%) had at least a net.

Although over 92% of the district hospital respondents mentioned that ITNs and insecticides were used as one of monitoring and evaluation indicators, none of them could tell what proportion of the budget in annual district health plan was earmarked for ITNs promotion activities including those CHMT members who fully participate in the planning process each year.

In view of the fact that proportion of pregnant women sleeping under ITNs treated within required time frame was one of the aspects used to measure success and problems of malaria control activities, this survey assessed whether the district had information that showed a proportion of pregnant

women who slept under ITNs treated within required time frame. None of the respondent could tell the respective proportions. Similarly none of the respondents could tell the proportion of hamlets having at least one outlet selling ITNs and insecticides.

When respondents were asked what they do instead to monitor and evaluate malaria control activities using ITNs, 71% of them stated that increase in ITN and insecticide sales were taken as a success in malaria control activities.

Respondents were asked to give their suggestions on the practicability of ITN as an indicator for monitoring and evaluation of malaria control activities in their district. Over 93% suggested that there should be a deliberate effort to formulate a mechanism for proper record keeping. The also suggested that a systematic follow-up of net usage and retreatment be formulated. They stressed on the importance of sensitization of community members on importance of sleeping under treated nets particularly the vulnerable groups to create awareness on the importance of the evaluation on ITN activities. Others (87%) recommended that there should be a constant supply of nets and insecticide in the health facilities readily available when individuals have money and willing to purchase. Even though none of the respondents knew the proportion of the budget set aside for ITN promotion, about 80% suggested that the budget as well as staff dealing with ITNs should be increased.

Intermittent Prophylactic Treatment

Malaria infection during pregnancy is a major public health problem in malaria endemic regions. Pregnant women comprise a vulnerable group. Malaria infection of the mother may result in a range of adverse pregnancy outcomes, including spontaneous abortion, neonatal death, and low birth weight (LBW). The national guideline for malaria diagnosis and treatment recommends that women should attend antenatal clinic at the beginning of their second and third trimesters for Intermittent Presumptive Treatment with Sulfadoxine Pyrimethamine (SP) and should also be advised to sleep under Insecticide Treated Nets (ITNs) at night and to take other personal protective measures to reduce contact with mosquitoes. Treated mosquito nets can protect pregnant women, and the same net can be used to guard the life of the new - born baby. In Rufiji district IPT was implicitly used. This research intended to explore the extent to which IPT could reflect success or failure of malaria control activities in the district. Over 94% of respondents from all levels of government health facilities mentioned that the district was implementing the national policy for malaria control during pregnancy. At all levels of the health facilities, 57% of them said that, the district considered IPT as one of indicators for monitoring and evaluation of malaria control activities. However, the interviews done revealed variations of an understanding of whether IPT was one of the monitoring and evaluation of malaria control activities as shown in table 6 below.

Table 6: An Understanding on IPT as an M&E Indicator for Malaria Control Activities

	District Hospital		Health Centre		Dispensary		Total	
	No	%	No	%	No	%	No	%
Yes	8	61.5	7	53.8	5	50	20	57.1
No	4	30.8	3	23.1	4	40	10	28.6
I don't know	1	7.7	3	23.1	1	10	5	14.3

When asked if IPT was used as an indicator to measure success and problems of malaria control activities, 52% stated that IPT was not used as an indicator, 34% mentioned that IPT was used as an indicator, and 14% did not know whether IPT was used an indicator.

Information on reasons why the district used IPT as an indicator for monitoring and evaluation of malaria control activities was also collected from all levels of government health facilities in the district. The reason mentioned was to control malaria cases and its impact during pregnancy. This reason was mentioned by 36% of respondents at all levels of the health facilities.

Other reasons mentioned were to evaluate the usefulness of the program in order to improve it (14%) and IPT was implemented because it was a national

guideline (11%). The other 39% did not know why IPT was used as an indicator for monitoring and evaluation of malaria control activities.

While 34% mentioned that IPT was used as an indicator to measure success and problems of malaria control activities in the district, research findings demonstrated that none of them could tell what proportion of the budget in annual district health plan was earmarked for IPT. In a group discussion held with some respondents at the district hospital they emphatically mentioned that there was no specific/special budget consideration for IPT drugs alone. They reported that all drugs for malaria were inclusively budgeted as a wholesome.

The survey intended also to draw out suggestions from respondents on the practicability of IPT as an indicator for monitoring and evaluation of malaria control activities in their district. Fifty-eight (58%) percent of respondents at all levels of the health facilities mentioned that IPT was a good indicator to use. However, they suggested that there should be a deliberate effort to formulate formal training among the responsible health facility personnel on the importance of evaluation as well as the necessary aspects to be considered for monitoring and evaluation. Twenty (20%) percent of the respondents suggested that higher authorities should provide guidelines on how to keep records and follow-up that conforms with the need for evaluation. However, a formal training should follow this. The other 22% had no suggestions.

Advocacy, Information, Education and Communication

Tanzania adopted a set of core indicators that would be used to monitor changes in malaria morbidity and mortality as a response to RBM objective. Advocacy and Information, Education and Communication (IEC) were collectively used as one the indicators.

This study intended to look at the feasibility of this indicator in Rufiji district as one of its objectives. Research findings indicated that over 85% of all health facility staffs at all levels mentioned that advocacy, IEC had been taking place in malaria control activities. In a multiple response question on what health information the district advocates to community members, the most mentioned ones were preventive measures on malaria including use of ITNs (84%). Other information included importance of early diagnosis and treatment (75%), importance of intermittent presumptive treatment (69%) and causes and outcome of malaria (58%).

Although 85% of all health facility staffs at all levels mentioned that advocacy; IEC had been taking place in malaria control activities, none of them was able to tell what has been the proportion of the district health budget was allocated to advocacy, information, education and communication nevertheless the CHMT members who were likely to be the right people with such information. Generally there were no records that could reflect the proportion of

mothers/caretakers able to recognize signs and symptoms of danger of a febrile disease in under-five children.

An assessment on the feasibility of Advocacy and IEC made by this study indicated that 55% of the respondents at all levels of the health facilities mentioned that the indicator was feasible. 31% were of opinion that the indicator was not feasible and 14% did not know if the indicator was feasible. Participants who mentioned that the indicator was not feasible gave reasons that it was difficult to measure given the fact that health facility staff were inadequate to reach all community members for effective health information, education and communication nor given guidelines on how to evaluate using the selected indicators.

All respondents at all levels of health facilities were also asked to give their suggestions on practicability of advocacy, information, education and communication. About 42% mentioned that Advocacy, IEC was a good indicator for reflecting success of malaria control activities. 31% suggested that training of health facility staffs on importance of evaluation and important elements for advocacy, IEC as an indicator. The remaining 27% had no suggestions.

A question to establish whether there had been an active collaboration between CHMT and research institutions or groups in the district was asked. All respondents mentioned that there was an active collaboration between Tanzania Essential Health Intervention Project (TEHIP) and Ifakara Health Research & Development Centre (IHRDC). Others included Nyakitasi Foundation Trust (a local non governmental organisation) and Medicos Del Mundo. In a multiple question on what has the CHMT benefiting from the mentioned institutions, over 58% of respondents at all levels of the health facilities mentioned that research institutions in the district provided data to help the district to have an evidence based health plan and 47% mentioned improvement of health services as another benefit.

CHAPTER FIVE

5.0 Discussion

Rufiji district has been implementing a number of health programs. However findings of this survey show that the majority of health facility workers at all levels mentioned IMCI and ITNs only as strategies for malaria control. This meant that only the majority knew two of the malaria control strategies out of seven RBM indicators. The remaining indicators namely case management (early/rapid diagnosis and treatment at community level), improved malaria diagnosis and case management at health facilities, epidemic prevention and control and health sector development were not known by majority. The other relevant malaria control indicator namely, advocacy, information, education and communication were known only to a minority (> 10%) at the lower levels and 31% at the district level health staff. The implication of this is that the RBM initiative may not reach its full potential if the aim was to reduce the burden of malaria by half of the current status in endemic countries through implementation of RBM initiative, then according to the findings, this may not be possible to achieve. Therefore there is a need by the World Health Organization (WHO) and the Ministry of Health (MOH) to revisit the RBM initiative in Tanzania. Even the two indicators mentioned by majority of health facility staff had a number of setbacks.

Results show that dispersion of the RBM initiative has not percolated sufficiently. There was no formalized plan to diffuse this initiative. Less than half of respondents at the district hospital heard RBM knowledge formally. The rest of the health staff at the district hospital and lower levels were significantly unaware. Few knew about RBM through informal channels. This again suggests that there had been no organised formal plan to create awareness on RBM at all levels of health facility for uniform understanding. Here there is a big question that with minority senior staff at district level knowing about RBM, can RBM achieve success given that it has not reached the primary health care level?

In Rufiji District currently there was a significant presence of migrant workforce for bridge and road construction works. These workers were the main buyers of the insecticide treated nets (ITNs) and therefore the sales of ITNs and insecticides do not reflect the real success of malaria control activity. A net sale is not the right indicator to evaluate success. The appropriate indicator would be to find through annual cross section surveys on coverage and pattern of ITNs usage especially by the vulnerable groups. Such activities are neither planned nor implemented. Remarkably the senior health staffs are not even aware that they should be including these activities in the district health plan. Thus this lack of vision will compromise the RBM initiative.

On intermittent presumptive treatment (IPT), the majority of the respondents knew about malaria prevention during pregnancy, however only about 50% mentioned IPT specifically. Less than 10% mentioned IPTas a control strategy or as a RBM indicator. The questionnaire survey showed that only 22% of pregnant women actually had IPT during their pregnancy.

The specific awareness of IPT is low, the implementation is also low and therefore the usage of IPT as an indicator of RBM success is not feasible. Perhaps the national malaria control program project (NMCP) should revisit its strategy about IPT. There is a need for a policy document that should be distributed to all the districts. The document should include mechanism of using IPT as a control strategy and used as an indicator. Importantly, the policy should be clear of how the districts can adopt IPT in their district health plans within the context of health sector reforms. Specifically how can the district implement IPT strategy and record the usage so that it can reflect changes in malaria morbidity and mortality during pregnancy.

There is high awareness as regards malaria prevention and control. This may be due to a number of research projects in the district. More than half of the respondents agree that advocacy, information, education and communication was a feasible indicator, however it was not given much weight in terms of

budget allocation and implementation. Again implication of this is that it compromises the RBM initiative.

Perhaps the district should think about an integrated way of advocacy, information, education and communication for common diseases in the district like STI/HIV/AIDS, TB, malaria etc. However, to realize this they will require support from the central authority.

Currently Rufiji district is experiencing a serious shortage of qualified health facility staff. According to 2002/2003 comprehensive district annual health plan the district hospital was experiencing a shortage of 42 personnel of different cadres against the available 30 staffs. The health centres had 51 members of staff at work against the required 128. The dispensaries were in short of 220 against 66 who were at work in the 2002/2003. This means health services in the district are provided by only 32% of the required workforce. In such situation effective monitoring and evaluation exercise would be difficult implemented.

Monitoring and evaluation work require adequate knowledge and skills in data collection of which the district seem to be seriously disadvantaged. Monitoring and evaluation would be an additional burden to the current serious shortage of human manpower against a number of responsibilities health facility staff already has.

CHAPTER SIX

6.0 Conclusion And Recommendations

6.1 Conclusion

Data from this study clearly shows that monitoring and evaluation of RBM initiative is lagging behind thus it may not reach its full potential. Only two indicators are being monitored and this was done inadequately. It is not possible to know straight forward how the malaria burden has changed over the past five years of implementation of malaria control activities. Given the current trend the RBM may not be able to achieve its objective of reducing malaria by half of the current status by the year 2010.

Amongst the problems, inadequate human resources at the district was aggravating the feasibility of using selected essential monitoring and evaluation of malaria control activities. In addition the district authorities need to have the central support especially technical support so as to reach a level where preventive services can be implemented, monitored and evaluated. This study also indicates to a certain extent the deficiencies in implementation of health sector reform since malaria control is a major single undertaking.

6.2 Recommendations

Formal organised training on RBM activities need to be planned and implemented (with a help from the central authority) among health facility staff at all levels for uniform understanding and effective implementation of monitoring and evaluation of malaria control activities.

The district council should liaison with and look for permission from the central authority to bridge the serious current workforce gape. There is no way monitoring and evaluation can effectively be done with the current number and level of the health facility staff.

7.0 REFERENCES

Andrew Boner and Lisa Jamu (1998). How to get People Most at Risk of Malaria use a Treated Net Properly and Constantly. Malaria Matters, Featuring *Netting News*, Issue 3

Bruce Chwatt (1978) in: W. H. Wernsdorfer Principles *and Practices of malariaology*, vol. 2, 1988.

Christian Lengeler, Jacqueline Cattani and Don de Savigny (1996). *Net Gain: A new method for preventing malaria deaths.* International development Research Centre and WHO.

Don de Savigny: From Monitoring to Forecast: Paper presented at The Third MIM Pan-African Conference – Arusha, Tanzania (17^{th} – 22^{nd}, 2002)

Halima A. Mwenesi, (1999) Insecticide Impregnated Bednets for Africa – Implementation, Prospects and challenges for malaria control. Proceedings of the MIM African Malaria Conference, Durban South Africa.

7.0 REFERENCES

Andrew Boner and Lisa Jamu (1998). How to get People Most at Risk of Malaria use a Treated Net Properly and Constantly. Malaria Matters, Featuring *Netting News*, Issue 3

Bruce Chwatt (1978) in: W. H. Wernsdorfer Principles *and Practices of malariaology*, vol. 2, 1988.

Christian Lengeler, Jacqueline Cattani and Don de Savigny (1996). *Net Gain: A new method for preventing malaria deaths*. International development Research Centre and WHO.

Don de Savigny: From Monitoring to Forecast: Paper presented at The Third MIM Pan-African Conference – Arusha, Tanzania (17th – 22nd, 2002)

Halima A. Mwenesi, (1999) Insecticide Impregnated Bednets for Africa – Implementation, Prospects and challenges for malaria control. Proceedings of the MIM African Malaria Conference, Durban South Africa.

MOH 2003. United Republic of Tanzania, Ministry of Health Workshop of the Partners/stakeholders involved in the Demographic Surveillance Systems for the Development of Monitoring and Evaluation Network - Bagamoyo.

National Malaria Control Programme - Ministry of Health, 2000. National Guideline for Malaria Diagnosis and Treatment in Tanzania:

Nature (2000) Plasmodium falciparum: Malaria enters the genomic era.

RBM (1999). The past and the present. Volume 2 no. 1.

RBM (2000). Advocacy guide. WHO/CDS/RBM/2000.26

RBM (2003). What is Malaria?

RBM External Evaluation of Roll back Malaria: Achieving Impact: Roll back Malaria in the Next Phase. August 2002. (Pg 5-50). London School of Hygiene and Tropical Medicine and Liverpool School of Tropical Medicine

RBM/WHO/OMS/UNICEF/BANQUE MONDIALE/UNDP (2000). The Abuja Declaration and the Plan of action. WHO/CDS/RBM/2003.46

Rufiji Demographic Surveillance System Annual Report (1999/2000).

MOH 2003. United Republic of Tanzania, Ministry of Health Workshop of the Partners/stakeholders involved in the Demographic Surveillance Systems for the Development of Monitoring and Evaluation Network - Bagamoyo.

National Malaria Control Programme - Ministry of Health, 2000. National Guideline for Malaria Diagnosis and Treatment in Tanzania:

Nature (2000) Plasmodium falciparum: Malaria enters the genomic era.

RBM (1999). The past and the present. Volume 2 no. 1.

RBM (2000). Advocacy guide. WHO/CDS/RBM/2000.26

RBM (2003). What is Malaria?

RBM External Evaluation of Roll back Malaria: Achieving Impact: Roll back Malaria in the Next Phase. August 2002. (Pg 5-50). London School of Hygiene and Tropical Medicine and Liverpool School of Tropical Medicine

RBM/WHO/OMS/UNICEF/BANQUE MONDIALE/UNDP (2000). The Abuja Declaration and the Plan of action. WHO/CDS/RBM/2003.46

Rufiji Demographic Surveillance System Annual Report (1999/2000).

WHO Implementation of the Global Malaria Control Strategy (Technical Report series Number 839). Geneva. WHO 1993.

WHO Regional Office Africa – Brazzaville. World Health Organization, African Regional Anti malaria strategy. Background document of thirty sixthly session of regional committee for Africa. Brazzaville, September 1986.

WHO/RBM (1998). A global partnership

WHO/UNICEF African malaria Report 1999.

WHO/UNICEF African malaria Report 2000.

World Bank (1993). World Development Report: *Investing in Health*. Oxford University Press.