PMI

USAID - CDC

President's Malaria Initiative

# Tanzania
# Rapid Assessment

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# Draft

National Malaria Control Programme

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

CENTERS FOR DISEASE CONTROL AND PREVENTION

# President's Malaria Initiative

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# Tables and Figures

## Tables



## Figures

# Acronyms

| | |
|---|---|
| ACT | Artemisinin-based Combination Therapy |
| ADB | African Development Bank |
| ADDO | Accredited Drug Dispensing Outlet |
| ADR | Adverse Drug Reaction |
| AIDS | Acquired Immune Deficiency Syndrome |
| AMANET | African Malaria Network Trust |
| ANC | Ante Natal Care |
| AO | Acridine Orange |
| ARV | Anti-Retro Virals |
| BTI | Bacillus thiringensis israelii |
| CAS | Country Assistance Strategy |
| CBO | Community-Based Organization |
| CCT | Christian Council of Tanzania |
| CDC | Centers for Disease Control and Prevention |
| CEDHA | Center for Educational Development in Health |
| CEEMI | Centre for Enhancement of Effective Malaria Interventions |
| CHMT | Council Health Management Team |
| CSSC | Christian Social Services Commission |
| DANIDA | Danish International Development Agency |
| DCI | Development Cooperation Ireland |
| DDT | Dichlorodiphenyl trichloroethylene |
| DfID | United Kingdom Department for International Development |
| DHC | District Health Council |
| DHS | Demographic and Health Survey |
| DMIS | Drug Management Information System |
| DMO | District Medical Officer |
| DoD | Department of Defense |
| DSS | Demographic Surveillance System |
| EABL | East African Botanicals Limited |
| FANC | Focused Ante Natal Care |
| FBO | Faith-Based Organization |
| FY | Fiscal Year |
| GDP | Gross Domestic Product |
| GFATM | Global Fund to Fight AIDS, Tuberculosis and Malaria |
| GOT | Government of Tanzania |
| HIMAL | Highland Malaria Project |
| HIV | Human Immunodeficiency Virus |
| HMIS | Health Management Information System |
| IDA | International Development Association |
| IEC | Information, Education and Communication |
| IHRDC | Ifakara Health Research and Development Centre |
| IMCI | Integrated Management Childhood Illness |
| IMF | International Monetary Fund |
| IPT | Intermittent Preventive Treatment |
| IRS | Indoor Residual Spraying |
| JAS | Joint Assistance Strategy |
| JICA | Japan International Cooperation Agency |
| JSI | John Snow, Incorporated |
| LLIN | Long Lasting Insecticidal Nets |
| LSHTM | London School of Hygiene & Tropical Medicine |

| | |
|---|---|
| MDG | Millenium Development Goals |
| MEMS | Mission for Essential Medical Supplies |
| MMTSP | Malaria Medium Term Strategic Plan |
| MMV | Medicines for Malaria Venture |
| MOH | Ministry of Health |
| MOU | Memorandum of Understanding |
| MSD | Medical Stores Department |
| MSF | Medicins Sans Frontieres |
| MSH | Management Sciences for Health |
| MTEF | Medium Term Expenditure Framework |
| NATNETS | National Insecticide Treated Nets Implementation (NATNES) |
| NEDLT | National Essential Drugs List of Tanzania |
| NIH | National Institutes of Health |
| NMCP | National Malaria Control Program |
| NMRI | National Medical Research Institute |
| NTC | National Therapeutics Committee |
| OPD | Out-Patient Department |
| PHCI – I | Primary Health Care Institute - Iringa |
| PHR – Plus | Partners in Health Reform - Plus |
| PLWHA | People Living with HIV-AIDS |
| PMI | President's Malaria Initiative |
| PRSP | Poverty Reduction Strategy Papers |
| PORALG | President's Office Regional Administration and Local Government |
| PSI | Population Services International |
| PWA | Persons Living with AIDS |
| RBM | Roll Back Malaria |
| RDT | Rapid Diagnostic Test |
| RMO | Regional Medical Officer |
| RNE | Royal Netherlands Embassy |
| RPM Plus | Rational Pharmaceutical Management - Plus |
| SDC | Swiss Development Cooperation |
| SEAM | Strategies to Enhance Access to Medicines |
| SP | Sulfadoxine-Pyrimethamine |
| STI | Swiss Tropical Institute |
| TaNAAM | Tanzania NGO Alliance Against Malaria |
| TB | Tuberculosis |
| TDHS | Tanzania Demographic Health Survey |
| TEC | Tanzania Episcopal Conference |
| TFDA | Tanzania Food and Drug Authority |
| THIS | Tanzania HIV/AIDS Indicator Survey |
| TMTL | Textile Manufacturers of Tanzania Limited |
| TNF | Tanzania National Formulary |
| TNVS | Tanzania National Voucher Scheme |
| UNFPA | United Nations Fund for Population Activities |
| UNHCR | United Nations High Commissioner for Refugees |
| UNICEF | United Nations Children's Emergency Fund |
| USAID | United States Agency for International Development |
| USFY | United States' Fiscal Year |
| USD | United States Dollars |
| VAT | Value Added Tax |
| WHO | World Health Organization |
| WHOPES | World Health Organization Pesticide Evaluation Scheme |
| WSC | World Summit for Children |
| ZMCP | Zanzibar Malaria Control Program |
| ZTC | Zonal Training Center |

Section 1

# Introduction

*President's Malaria Initiative in Tanzania.*

The new President's Malaria Initiative (PMI) seeks to "*dramatically reduce malaria as a major killer of children in sub-Saharan Africa.*[1]" The goal is to reduce malaria deaths by 50 percent in targeted countries in Africa. The initiative estimates that 85 percent coverage of vulnerable or high risk groups with preventive and curative actions will be necessary to achieve the goal. The main actions the initiative will support are: promotion of insecticide-treated nets (ITNs), indoor residual spraying (IRS), prompt and effective case management of malaria and intermittent preventive treatment (IPT) in pregnancy.

A total of United States Dollars (USD) $1.2 billion will be made available to up to 15 sub-Saharan African countries over the next five years, starting in U.S. Fiscal Year 2006 (which begins on October 1, 2005 and ends on September 30, 2006) . These resources are in addition to the USD $200 million the US Government already spends on malaria and it is hoped that they will benefit approximately 175 million people.

**SUMMARY**

| |
|---|
| Reduction of malaria mortality by 50% |
| PMI is for five years starting in USFY 2006 |
| Rapid assessment in August 2005 |
| Strategy development and planning in October 2005 |

Initially, USD $30 million will be used to launch the initiative in three countries—Tanzania, Uganda and Angola in US FY 2006. Other countries will be added later as resources become available.

To lay the groundwork for the initiative in Tanzania, USAID-Tanzania and the Centers for Disease Control and Prevention (CDC), partners in the initiative, have commissioned this report of malaria activities in the country. This report is a "rapid" assessment that will provide a basis for initial discussions within USAID-Tanzania and the CDC as well as constitute a starting point for discussions with the Government of Tanzania (GoT) and the development partners working in malaria.

[1] http://www.whitehouse.gov/news/releases/2005/06/print/20050630-8.html

**"For the PMI to be successful the National Malaria Control Program needs to be in the driver seat and our efforts need to be collaborative with all those who are working against malaria in Tanzania"**

**Pamela White**
**Director**
**USAID -Tanzania**

# Methodology

*Rapid Assessment*

The assessment began on July 5, 2005 by Dr. René Salgado, a consultant hired by USAID-Tanzania for that purpose. After discussions between USAID and CDC it was agreed that a more formal team be put together and travel to Tanzania to work with Dr. Salgado. The team was made up of Dr. Matt Lynch, of USAID-Global, Dr. Patrick Kachur from CDC - Tanzania, Dr. Noel Chisaka, of WHO-AFRO, and Ms. Rima Shretta from MSH-RPM Plus. The expanded team arrived in country starting on August 3, 2005 and departed Tanzania on August 14 2005. The total person-weeks spent on this assessment was 14.

A scope of work and table of contents (Annex 1) were drafted by the USAID/CDC team in Washington, DC and Atlanta, Georgia. The team used both items to inform data collection and conduct interviews with key stakeholders. A list of principals (Annex 2) was compiled and interviews were scheduled with as many individuals as was possible in the limited time available to the team (Annex 3). The team met between interviews or at the start/end of the day to discuss advances, identify gaps and strategize interviews. Writing assignments were given according to area of expertise to each of the team members. The final report was organized, edited and formatted by Dr. Salgado and approved by all team members.

Section 2

# Country Setting[2]

*History and Geography*

The United Republic of Tanzania consists of mainland Tanzania (known before the union with Zanzibar as Tanganyika) and the islands of Zanzibar (Unguja and Pemba), which are located approximately 30 km. from the mainland in the Indian Ocean. Tanganyika first gained independence from the British in 1961. In 1964, the newly independent Zanzibar joined with Tanganyika to form the United Republic of Tanzania. Although many governmental functions were joined (e.g. foreign relations) responsibility for health remained independent and currently each country has its own Ministry of Health. The term "Tanzania" is often used to mean the United Republic of Tanzania, that convention will be used throughout this document.

| KEY FINDINGS |
| --- |
| The United Republic of Tanzania comprises Mainland and Zanzibar |
| Mainland and Zanzibar maintain independent ministries of health |
| Tanzania's population is approximately 35,000 of which about 1 million live in Zanzibar |
| Annual per capita income is USD $270 |
| 36% of population below poverty line |

Located on the Eastern coast of Africa just South of the equator (Longitude 29 and 41 East, Latitude 1 and 12 South), Tanzania covers a surface of 945,087 square kilometers including 59,050 Km$^2$ of inland waters and 2,000 Km$^2$ of the Zanzibar Islands. The mainland has 1,424 kilometers of coastline. Tanzania is roughly two times the size of California and it is the largest of the East African countries (i.e. Kenya, Uganda and Tanzania). Although large, climatic and topographical conditions limit cultivated crops to about 4 percent of the total land mass. Most of the country lies on the East African plateau, 900 to 1,800 meters high, bordered by two branches of the rift Valley.[3] The country has borders with 8 other countries; on the North and North West by Kenya, Uganda, Burundi and Rwanda, to the West is Lake Tanganyika and the Democratic Republic of the Congo, in the South-West is Zambia and Malawi, on the South is Mozambique and to the East the Indian Ocean in which the islands of Zanzibar are located (See Figure 1). Tanzania has the distinction of being situated between the great lakes of Africa—Nyasa, Tanganyika and Victoria. The official political capital is Dodoma (since October 1974), while Dar es Salaam is the center of commercial activity and Arusha and Zanzibar the main centers of tourism. Zanzibar Town is the capital of Zanzibar.

[2] The reader already familiar with Tanzania may wish to skip this section and go directly to Section 3.
[3] Area Hand Book Series: Tanzania – A Country Study. 1978

Figure 1: Map of Tanzania


Source: CIA Fact book.

There are three distinct physiographic regions—the islands and coastal lowlands, the inland central plateau and the highland areas, each with a distinct climate. Mount Kilimanjaro at 5,895 meters above sea level, it is the highest peak in the country and of all of East Africa. With the exception of the highlands, where temperatures range between 10° – 20° C during the year, the rest of the country rarely sees temperatures below 20° C with highs averaging around 31° C, with little variation, particularly on the coast. Temperatures of 35° C during the hot season (November - February) are not unusual. The lowest temperatures are usually registered in June and July in most of the country. There are two rainfall regimes in Tanzania, heavily influenced by the Indian Ocean monsoons. One occurring between December and April affecting mostly the North of the country, and another affecting the central and Southern portions of the country which itself has two rainy seasons—the "short" rains (Vuli) in October – December and the "long" rains (Masika) between March – May. Annual rainfall in the coastal lowlands can be as high as 1,000 mm while in the inland central plateau annual rainfall averages approximately 250 mm per year.

## *Population*

Tanzania is the most populous of the East African countries with a population reported in the 2002 Census as 34,443,603 individuals, of which 981,754 live in Zanzibar. The growth rate since 1988 is estimated at 2.9 percent annually. Approximately 20 percent of the population in both the mainland and Zanzibar is under five years of age and about 4 percent are pregnant women. The average household size, according to the Household Budget Survey (2000 – 2001) is 4.9 persons.

According to the 2002 Population and Housing census, about 20 percent of the population is considered urban. With a population of 2.5 million, Dar-es-Salam is the largest and densest urban center in the country (1,793 population per Km2). The next densest is Zanzibar with1,700 population per Km.2 Overall, the population density can be considered low at 30 per Km2. Other important urban centers are Arusha, Moshi, Tanga and Mwanza in the North, Morogoro in the East, Mbeya and Iringa to the West. Tabora and Shinyanga located in Central Tanzania are also considered important. See Table 1 for populations by region.

**Table 1: Census Counts, 2002 Projected Population and Inter-censal Growth Rates by Region**

| | Actual Population From the Censuses | | | | Projected Population | Growth Rate | |
|---|---|---|---|---|---|---|---|
| **Region** | **1967** | **1978** | **1988** | **2002** | **2002** | **1978-1988** | **1988-2002** |
| Dodoma | 709,380 | 972,005 | 1,235,328 | 1,698,996 | 1,707,275 | 2.4 | 2.3 |
| Arusha | 610474* | 926223* | 744,479 | 1,292,973 | 1,221,890 | 3.8+ | 4.0 |
| Kilimanjaro | 652,722 | 902,437 | 1,104,673 | 1,381,149 | 2,019,963 | 2.1 | 1.6 |
| Tanga | 771,060 | 1,037,767 | 1,280,212 | 1,642,015 | 1,742,413 | 2.1 | 1.8 |
| Morogoro | 682,700 | 939,264 | 1,220,564 | 1,759,809 | 1,783,664 | 2.6 | 2.6 |
| Pwani | 428,041 | 516,586 | 636,103 | 889,154 | 848,316 | 2.1 | 2.4 |
| Dar es Salaam | 356,286 | 843,090 | 1,360,850 | 2,497,940 | 2,547,217 | 4.8 | 4.3 |
| Lindi | 419,853 | 527,624 | 646,494 | 791,306 | 848,562 | 2.0 | 1.4 |
| Mtwara | 621,293 | 771,818 | 889,100 | 1,128,523 | 1,079,816 | 1.4 | 1.7 |
| Ruvuma | 395,447 | 561,575 | 779,875 | 1,117,166 | 1,222,242 | 3.4 | 2.5 |
| Iringa | 689,905 | 925,044 | 1,193,074 | 1,495,333 | 1,737,791 | 2.7 | 1.5 |
| Mbeya | 753,765 | 1,079,864 | 1,476,278 | 2,070,046 | 2,235,271 | 3.1 | 2.4 |
| Singida | 457,938 | 613,949 | 792,387 | 1,090,758 | 1,109,005 | 2.5 | 2.3 |
| Tabora | 502,068 | 817,907 | 1,036,150 | 1,717,908 | 1,432,673 | 2.4 | 3.6 |
| Rukwa | 276,091 | 451,897 | 698,718 | 1,141,743 | 1,218,977 | 4.3 | 3.6 |
| Kigoma | 473,443 | 648,941 | 856,770 | 1,679,109 | 1,240,939 | 2.8 | 4.8 |
| Shinyanga | 899,468 | 1,323,535 | 1,763,800 | 2,805,580 | 2,615,565 | 2.9 | 3.3 |
| Kagera | 658,712 | 1,009,767 | 1,313,594 | 2,033,888 | 1,957,921 | 2.7 | 3.1 |
| Mwanza | 1,055,883 | 1,443,379 | 1,876,635 | 2,942,148 | 2,665,956 | 2.6 | 3.2 |
| Mara | 544,125 | 723,827 | 946,418 | 1,368,602 | 1,432,476 | 2.9 | 2.5 |
| Manyara | N/A | N/A | 603,691 | 1,040,461 | 999,729 | N/A | 3.8 |
| Total, Mainland | 11,958,654 | 17,036,499 | 22,455,193 | 33,584,607 | 33,667,659 | 2.8 | 2.9 |
| North Unguja | 56,360 | 77,017 | 96,989 | 136,953 | 137,976 | 2.3 | 2.5 |
| South Unguja | 39,087 | 51,749 | 70,313 | 94,504 | 110,733 | 3.1 | 2.1 |
| Urban West | 95,047 | 142,041 | 208,571 | 391,002 | 363,253 | 3.8 | 4.5 |
| North Pemba | 72,015 | 106,290 | 137,189 | 186,013 | 203,137 | 2.6 | 2.2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| South Pemba | 92,306 | 99,014 | 127,623 | 176,153 | 188,695 | 2.6 | 2.3 |
| Total, Zanzibar | 354,815 | 476,111 | 640,685 | 984,625 | 1,003,794 | 3.0 | 3.1 |
| Total, Tanzania | 12,313,469 | 17,512,610 | 23,095,878 | 34,569,232 | 34,671,453 | 2.8 | 2.9 |

**Note :**

- * Includes Manyara
- + Growth Rate is for the combined Arusha and Manyara Regions.
- Arusha region of 1988 was split into the current Arusha and Manyara regions just before the 2002 census.

The figures shown against Arusha and Manyara regions for 1988 have been obtained by summing up the 1988 district census counts as follows:
Arusha (Arusha, Arumeru, Ngorongoro and Monduli); Manyara (Babati, Hanang, Mbulu and Kiteto). However the population for Mangola, Oldean, Karatu, Mbulumbulu, Endabesh and Kansay wards of 1988 have been included in Arusha Region as they are now part of Karatu District Rhotia,
4) N/A = Not Applicable

Source: 2002 Census

## *Languages and ethnic groups*

The mainland has been occupied by humans since time immemorial. Some of the earliest evidence of bipedal humans has been found here (2.5 million years) and the remains of *homo habilis* were found in Olduvai Gorge. Different ethnic groups with different languages have come and gone over the centuries. Today, modern Tanzania is made up mainly of Bantu-speaking ethnic groups in the mainland and Afro-Arab descendents in Zanzibar. It has been estimated that there are up to 127 language groups in Tanzania, but Swahili is spoken by most groups. English is also spoken but it is not the preferred language for interpersonal communication--even in professional settings. Higher education is taught in English. None of the ethnic groups is politically predominant. The largest, the Sukuma, constitutes less than 13 percent of the population; while the others are mostly below 5 percent. This lack of dominance by any one group has been cited as a key factor in Tanzania's political stability.

## *Education and literacy*

Although the GoT has made great efforts to improve education in the country, there are still a number of outstanding problems. The Household Budget Survey (2000/2001) reports that up to 25 percent of the adults do not have any education and 29 percent are reported as functionally illiterate. The discrepancies between urban and rural are marked, with only 13 percent of adults in urban areas declaring not having any education compared to 30 percent for rural areas. Gender discrepancies are also important as women are twice as likely as men to not have received any form of education. 41 percent of rural women are unable to read. The regions with the highest number of adults without education are Lindi, Pwani and Shinyanga.

## *Housing and Services*

Dwellings in Tanzania are constructed mainly of traditional materials. However, the Home Budget Survey (2000/2001) has found an increase in the use of metal roofs (43 percent) and walls constructed with modern materials (25 percent). Most homes have flooring made of earth, sand or dung (71.4 percent). In rural areas this figure reaches 87.9 percent while only 26.3 percent homes in urban areas have such flooring.

Only 10 percent of dwellings are connected to electricity—most of them in Dar es Salaam (59 percent). The discrepancy between rural and urban is at its worst in regards to electricity—with only 2 percent of rural homes having electricity as compared to 30 percent in urban areas. In addition to Dar es Salaam, Arusha and Kilimanjaro regions are more connected to electricity than Shinyanga and Kagera.

Only 4.1 percent of dwellings in Tanzania have running water inside the home.[4] When urban and rural areas were compared, only 14.0 percent of homes in urban areas had inside the home running water as opposed to only 0.5 percent in rural areas. Water piped into the yard was found in 26.3 percent of urban households and only 3.9 percent of rural homes. "Safe"[5] water was found in 52 percent of households (79 percent urban, 43 percent rural).

The majority (84.3 percent) of homes in Tanzania, use a traditional pit toilet and only 3.9 percent have a flush toilet. As would be expected, the differences between urban and rural areas are pronounced. Overall 11 percent of homes do not posses a toilet at all.

The number of rooms used for sleeping—an important factor in the use of bed nets—is low, especially in urban areas. Approximately 36.9 percent of urban homes have only one room for sleeping, this figure is 24 percent in rural areas.

## *Income, poverty and inequality*

Tanzania is one of the poorest countries in the world. The annual per capita income is USD $270. According to the Household Budget survey of 2000/2001, 36 percent of Tanzanians fall below the basic needs poverty line and 19 percent below the food poverty line.[6] In absolute numbers, there are 11.4 million Tanzanians living below the basic needs poverty line. As is often the case, those living in rural areas are in worse condition than those living in urban areas with 39 percent of the rural population living below the basic needs poverty line as compared with 26 in urban areas--87 percent of the poor live in rural areas. As would also be expected, there are disparities among regions in the country. Lindi, Singida and Shinyanga as well as Pwani, Mara and Tabora are the most affected by poverty. Arusha and Kilimanjaro are much better off. Essentially, there has not

[4] Tanzania HIV/AIDS Indicator Survey (2003-2004). National Bureau of Statistics, Measure DHS.
[5] "Safe" was not defined.
[6] The price of a minimum food basket necessary to provide 2,200 calories per day based on the consumption pattern of the poorest 50 per cent of the population was used to draw the "food" poverty line. A higher, 'basic needs' poverty line was also set to allow for non-food consumption.

been any change in poverty since the last Household Budget Survey in 1991/1992. The Gini coefficient, a measure of expenditure inequality has remained virtually unchanged since the early 1990s at .35. According to the Household Survey 2000/2001 there have been increases inequalities across the board, but they are more marked in urban centers such as Dar es Salaam.

## *Religion*

Religion plays an important role in Tanzanian and Zanzibari society. Although no concrete data exists on religion demographics, informed individuals estimate that about one third of the country is Christian, one third Muslim and one third adheres to traditional beliefs. These distributions vary by region—with Zanzibar being more than 90 percent Muslim. Generally, coastal areas are predominantly Muslim while the plateaus and highland tend to be Christian. Of the Christian religions, the predominant is Catholic. Traditional beliefs often mix magical and healing activities. As will be seen later, Faith-based Organizations (FBOs) play an important role in the delivery of health services in Tanzania.

## *Main health indicators*

Many social and health indicators began a steady improvement in the late 1960s after independence. By the mid 1980s such advances came to an end. From 1985 to 2000, many health indicators remained at the same level and in some cases worsened. That 15-year period is a time of major adjustments for the nation. As it moved away from its socialist past to a free market economy, Tanzania's economy was severely readjusted. Some of these adjustments affected the MoH with freezing of staff levels and scarcity of commodities for providing appropriate health care. Select health indicators are in Table 2.

The 2004 – 2005 Tanzania Demographic and Health Survey, however, brought good news on a number of fronts. Infant and child mortality rates declined substantially. Infant mortality declined from 99.1 per 1000 live births in 1999 to 68 per 1000 live births in 2004. Under five mortality similarly declined from 146.6 to 112 per 1000 live births. Coverage rates for the major vaccines range between the mid 80s to low 90s. Unfortunately, reproductive health indicators remained at the same level since the last TDHS in 1999. Maternal mortality ratio increased from 529 to 578 per 100,000 live births. Although ante-natal visits are high (94.3 percent), deliveries still occur in the home approximately 60 percent of the time. Only 18 percent of women received IPT during an antenatal visit.

Malnutrition continues to be a serious among children under five in Tanzania. According to the TDHS (2004 – 2005) 38 percent of children under five are stunted and of those, 13 percent are severely stunted. Wasting was encountered in 3 percent of children under five and underweight affected 22 percent of children. All nutrition indicators are worse among the rural populations and in children

whose mother is illiterate. According to the Ministry of Agriculture, in 2003, there were 43 districts (39 percent) described as food insecure.[7]

Table 2: Selected Health Indicators for Tanzania

| Indicator | Rate/Ratios |
|---|---|
| Crude Birth Rate | 39.5 per 1000[a] |
| Crude Death Rate | 17.4 per 1000[a] |
| Growth Rate | 2.9 per annum[b] |
| Infant Mortality | 68 per 1000 live births[c] |
| Child Mortality | 47 per 1000[c] |
| Under Five Mortality | 112 per 1000 live births[c] |
| Maternal Mortality Ratio | 578 per 100,000[d] |
| Women with ante-natal care | 94.3%[c] |
| Deliveries by professional1 | 46.3%[c] |
| Total Fertility Rate | 5.7[c] |
| HIV prevalence in 14 – 49 cohort | 7%[c] |
| Life Expectancy | 44.6 years[a] |
| Dependency Ratio | 90.7[a] |
| Average Household Size | 4.9 persons per household[b] |
| Literacy | 71 percent[b] |

a. USAID Country Statistical Report, Tanzania 2004.
b. National Budget Survey 2000/01.
c. 2004 - 2005 Tanzania Reproductive and Child Health Survey
d. 1996 Tanzania Demographic and Health Survey

Among health problems that have an impact on morbidity and mortality of malaria is AIDS. The recent population-based Tanzania HIV/AIDS Indicator Survey (THIS) (2004) found that 7 percent of adults are HIV positive. The prevalence is higher in women (7.7 percent) than in men (6.3). Also, it is high in urban areas (10.9 percent) and lower in rural areas (5.3 percent). HIV rates are higher in Mbeya and Iringa—almost twice the national average. One significant difference is across economic quintiles; whereas the prevalence in women in the richest quintile is 11.4 percent, the prevalence in the poorest women is 2.8 percent.

## *Administrative divisions*

The country is divided into 26 administrative regions (21 Mainland, 5 Zanzibar) and approximately 130 districts (120 Mainland, 10 Zanzibar). Each district or as they are now being called, council, is in turn subdivided into divisions or wards, which can be just a few or 20 or more. The councils are the most important administrative and implementation structures for public health services. Some estimates put the number of towns and villages at around ten thousand. Since 1972, the government has been decentralized to promote involvement of the citizenry in affairs that concern them, including health.

[7] Poverty and Human Development Report, 2003. Dar es Salaam, Tanzania.

## *National and International commitments*

Tanzania is a signatory to a number of national and international commitments seeking to improve the health of its population, including: World Summit for Children (WSC) (1990), UN Special Session on Children (2002); Tanzania Development Vision 2025 (2000); The Abuja Declaration on Malaria (2000); Millennium Development Goals (2000); Poverty Reduction Strategy (2001-2004); 1989 UN Convention on the Rights of the Child (CRC), the 1990 African Charter on the Rights and Welfare of the Child, and the UN World Fit for Children Declaration (2002). Also, Tanzania has signed on to other agreements that impact on health like the Abuja Declaration on Water and the Dakar Education for All Framework (2000).

## *Millenium Development Goals*

Tanzania is one of 189 nations that in September 2000 at the General Assembly of the United Nations endorsed the Millennium Development Goals (MDGs). This endorsement commits the GoT to achieve a set of goals designed to improve the situation of the poor, some very similar to the WSC goals and to Tanzania's Poverty Reduction Strategy (PRS). Four out of the eight goals are directly related to the health of the poor. However, as economic development is, at least in part, dependent on a healthy population, it can be said that the majority of the MDGs are related one way or another to health.

## *The Abuja Declaration on Roll Back Malaria*

On April 25, 2000, Tanzania participated, along with 44 representatives from the 45 African countries affected by malaria, in the African Summit on Roll Back Malaria in Abuja, Nigeria. This meeting produced the Abuja Declaration on Roll Back Malaria in Africa which re-energizes the fight against malaria in the continent. The original targets for Abuja have been somewhat modified in Tanzania and scaled back to 2007 instead of 2005.

Section 3

# Malaria situation in Tanzania

## *Importance of malaria*

Malaria is the single most important cause of morbidity and mortality in Tanzania, both among adults and children under five years of age. It is estimated that 3.5 percent (USD $121 million) of the Gross Domestic Product (GDP) is consumed by malaria costs. Government facilities devote almost one-third of their resources to the disease. Private expenditure, primarily on drugs, coils, sprays and bed-nets, represents 71 percent of total expenditures on health in the country[8].

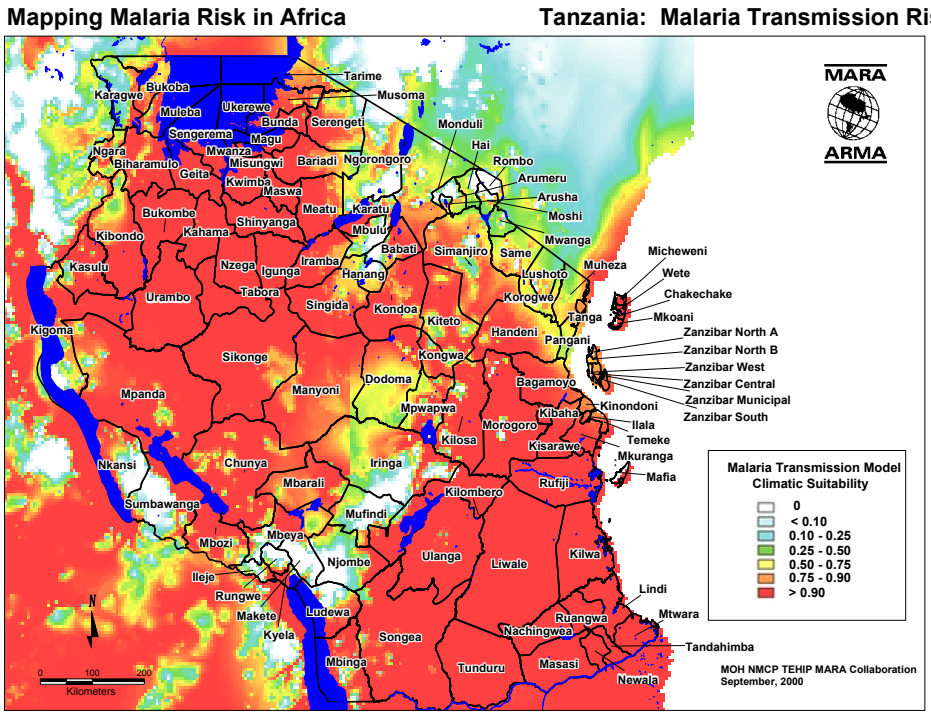
| KEY FINDINGS |
| --- |
| 93 % of population at risk of malaria |
| 25% of population at risk of epidemics |
| Malaria is the number one cause of death in children under five |
| Up 125,000 deaths from malaria per year |
| Up to 80,000 child deaths from malaria per year |

Ninety three percent of the population is considered at risk. About 20 districts (out of 126), which represent about 25 percent of the population, are prone to malaria epidemics every four to five years. Approximately 95 percent of cases of malaria are produced by *Plasmodium falciparum*. Estimates for overall number of cases of malaria are between 14 – 19 million cases per year—if each case of malaria affected only one person, up to 54 percent of the population would suffer a case of malaria in any given year. Of course this scenario is not possible, as malaria, like many other diseases, tends to affect mostly the poor and dispossessed and an individual can have many more than one case of malaria in a year.

Three malaria epidemiological strata exist in Tanzania: 1) Unstable seasonal malaria; 2) stable malaria with seasonal variations; 3) perennial malaria. Unstable seasonal malaria affects about 25 percent of the country's land mass and is concentrated mostly in the mountainous (highland) areas of the country at altitudes of up to 2,000 meters. Malaria transmission usually occurs during not more than 3 months of the year in such areas. So given the low immunity of the population (they do not contend with malaria in up to 9 months of the year), epidemics are frequent in this strata. The peak seasons for malaria for all strata occur during and immediately after the short and long rains.

[8] Jowett M, Miller NJ. The financial burden of malaria in Tanzania: implications for future government policy. Int J Health Plann Manage. 2005 Jan-Mar;20(1):67-84.

Figure 2: Malaria Transmission Risk




All human malaria vectors belong to the genus Anopheles, characterized by their "tail in the air" posture when resting and their dappled wings. In Tanzania there are three main vectors that transmit malaria: Anopheles gambiae sensu stricto, Anopheles arabiensis and Anopheles funestus. The principal vector in areas of perennial transmission is Anopheles gambiae sensu stricto. The Anopheles gambiae complex is present throughout the country.

A third or more of all out patient department (OPD) visits and hospital admissions are attributed to malaria.[9] In year 2000, there were 1,661,533 OPD consultations for malaria for children under five—almost 39 percent of total consults for children under five. Additionally, almost 55 percent of all children under five admissions to hospital were due to complicated malaria (See Table 1). Overall (all ages) there are 100,000 – 125,000 deaths per year from malaria, of which 80 thousand occur in children under five—that is 65 – 80 percent of all malaria deaths and 36 percent of all under five deaths. Data from sentinel sites describe a seasonality to overall under five mortality that is surely due to malaria, peaking during the "short" (November-December) and "long" (March – June) rains and declining during the dry season. Nationally, it is estimated that a Tanzanian child under five years of age will have .7 cases of malaria per year.[10]

The above morbidity and mortality figures do not recognize the fact that malaria contributes significantly to other maternal and child deaths through chronic

[9] The Costs, Effects, and Cost-Effectiveness of Changing the First-Line Drug for the Treatment of Malaria in Tanzania.
[10] Personal communication. Joanna Armstrong Schellenberg.

anemia, low birth weight, neurological problems and increases in the severity of other diseases.[11] So the toll malaria is responsible for is even higher.

Table 3: Leading Causes of Inpatient Admission for Children, 2000

| Disease | Percent of All Cases |
|---|---|
| Malaria | 54.7% |
| Pneumonia | 15.5% |
| Anemia | 13.3% |
| Diarrheal Diseases | 8.5% |
| Acute Respiratory Infections | 4.3% |
| Other | 3.7% |

Source: Tanzania Ministry of Health, Health Abstracts 2002

No analysis of the malaria situation in a country can go without mentioning anemia. According to the TDHS (2004 – 2005), 65.2 percent of children 6 months to 59 months have anemia and up to 42.8 percent of women are anemic. Some experts estimate that in the hardest hit areas, up to 90 percent of children under five in Tanzania may have anemia.[12] In 2000, 88,933 cases of anemia in children under five were reported by health facilities placing anemia in fifth place as a cause for consultation. This number is most likely an underestimation as most cases of mild and moderate anemia are missed.[13] The TDHS (2004 – 2005) estimates that 3.4 percent or more of all anemia in children under five is severe. Anemia was the third most common cause of hospitalization in children under five with 13.3 percent of the total (19,813 cases). However, another analysis of the data comprising more reports from facilities established that in 2003, there were 63,380 hospitalizations due to anemia. A case fatality rate of 5.7 percent has been established based on hospital reports.

It is very likely that a substantial portion of this anemia is the result of malaria. Studies have shown that in malaria endemic areas, up to 60 percent of anemia in children could be prevented by anti-malarial chemoprophylaxis or intermittent preventive treatment (IPT) in pregnancy. When anemia hospitalizations are combined with malaria hospitalizations--the two are inextricably linked in Tanzania--a sobering 54.7 percent of all admissions of children under five may be due to either or both anemia and malaria.

[11] The Costs, Effects, and Cost-Effectiveness of Changing the First-Line Drug for the Treatment of Malaria in Tanzania.
[12] Personal communication. Joanna Armstrong Schellenberg
[13] Personal communication National Malaria Control Program

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Section 4

# Current status of malaria control policies/strategies/activities

*Principal Malaria Indicators*

The Roll Back Malaria (RBM) core indicators[14] estimated through health facility and community surveys carried out in 2001 and 2003 show that although the incidence of malaria has not changed dramatically there is important progress in health worker skills, care seeking for malaria and bed net use. A health facility survey conducted by WHO in 2003 showed similar results (70 percent of malaria cases were treated correctly in facilities).

Table 4: Roll Back Malaria Core Indicators

| | Indicators | 2001 | 2003 | NMTSP Target 2007 | Abuja Target 2010 |
|---|---|---|---|---|---|
| 1 | Crude death rate (under five) | 184 /1000 | | | |
| 2 | Mortality attributed to malaria (all ages) | 31 | 32 | 20 | 15 |
| 3 | Mortality attributed to malaria (under five) | 38 | 41 | 25 | 19 |
| 4 | Mortality attributed to malaria (5 and above) | 23 | 10 | 15 | 12 |
| 5 | Morbidity attributed to malaria (all ages) | 42 | 40 | 28 | 21 |
| 6 | Morbidity attributed to malaria (under five) | 46 | 43 | 31 | 23 |
| 7 | Morbidity attributed to malaria (5 and above) | 41 | 38 | 28 | 21 |
| 8 | Case fatality rate (under five) | 2.8 | 3.2 | 1.9 | 1.4 |
| 9 | Case fatality rate (five and above) | 3.5 | 3.1 | 2.3 | 1.7 |
| 10 | % of under fives with fever getting | 11 | 27 | 60 | |

[14] Note: Two main sources for malaria data are used. First, the NMCP standard health facility/community survey, which is repeated every two years and which at the time of writing this report was being conducted (Page 15). Second, the Tanzania Demographic Health Survey, which in the case of Tanzania has been implemented every 4 – 5 years since the early 1990s (Page 32). In some cases the estimates for the same indicator from the two different sources are not in agreement. It is left up to reader to decide which source to use.

Table 4: Roll Back Malaria Core Indicators

| | Indicators | 2001 | 2003 | NMTSP Target 2007 | Abuja Target 2010 |
|---|---|---|---|---|---|
| | Appropriate treatment within 24 hours of onset | | | | |
| 11 | % of fever/uncomplicated malaria under five cases correctly managed at health facilities | 51 | 64 | 60 | |
| 12 | % of severe malaria cases (under-five) correctly managed at health facilities | 54 | 58 | 60 | |
| 13 | Proportion of inpatients cases due to malaria all ages | 46 | 40 | | |
| 14 | Proportion of inpatients cases due to malaria under five | 51 | 56 | | |
| 15 | Proportion of inpatients cases due to malaria five and above | 41 | 25 | | |
| 16 | Proportion of admissions due to malaria | 59 | 55 | | |
| 17 | % pregnant women taking SP for IPT | 29 | 49 | 60 | 60 |
| 18 | % pregnant women sleeping under treated mosquito net | 8 | 21 | | |
| 19 | Proportion of pregnant women sleeping under mosquito net during current pregnancy or during 6 months of last pregnancy | 36 | 42 | | |
| 20 | % of under fives sleeping under treated mosquito net. | 15 | 26 | | |
| 21 | % of under fives sleeping under mosquito net | 46 | 52 | | |
| 22 | % of mosquito nets treated with insecticide within the last 12 months | 33 | 49 | | |
| 23 | % of households having at least one ITN | 14 | 25 | | |
| 24 | Proportion of population sleeping under mosquito nets | 40 | 39 | | |

Source: NMCP – Monitoring Malaria Situation and Control Activities – Health Facility and Community Survey. Monitoring and Evaluation Unit 2001 – 2003.

## *Care Seeking*

Tanzania possesses an extensive network of public health facilities that make it possible for up to 80 percent of the population to be within 4 kilometers of health services. Although there are small populations that may be several hours or even days away from a facility they are the exception rather than the norm. This availability, in conjunction with a population accustomed to using health services on a regular basis, accounts for relatively high (compared to other African

countries) care seeking when individuals are sick. According to the Tanzania Demographic Health Survey (2004 – 2005) children who were sick with diarrhea two weeks before the survey were taken to a health provider 47 percent of the time. Similar and higher figures have been found for fever and cough. The same survey reports that 58 percent of children with fever/convulsions in the two weeks preceding the survey were given an anti-malarial. In general, care seeking is higher for small children and lower for adults.

In spite of the relatively high care seeking for malaria, there are still problems with care seeking. A traditional illness called *degedge*[15] which is associated with convulsions and correlates closely with severe malaria presents a special problem. *Degedge* is believed to be caused by a moth, but it also believed to appear "when malaria goes to the head." Unfortunately, the first response to *degedge* is to seek help from a traditional healer and treatment of choice is not necessarily and anti-malarial. This may cause delay in the management of the underlying cause—severe malaria.

In the specific case of fever, the private sector plays an important role in providing care. It has been estimated that when individuals seek care for fever, 70 percent do so with private providers (e.g. drugs sellers).

## *Malaria Diagnosis*

The Ministry of Health policy for malaria diagnosis is dependent on the level of care. At the primary health care level (dispensaries), the principal tool for diagnosing malaria is mainly clinical utilizing the Integrated Management of Childhood Illness (IMCI) case management protocol. At health centers some microscopy exists but again diagnosis is mainly clinical. Diagnosis for severe malaria at district and zonal hospitals and other referral hospital is parasitological via microscopy. Malaria microscopy is integrated within the overall framework of Ministry of Health laboratory policy. The National Malaria Control Program (NMCP) is spearheading an overall malaria laboratory capacity strengthening. The advent of Artemisinin-based combination therapy (ACT) in Tanzania—which is 10-20 times more expensive than Sulfadoxine-pyrimethamine (SP)--has motivated the Ministry of Health (MoH) to seek ways to improve diagnostic accuracy of malaria. The logic is simple, improved diagnosis will translate into more appropriate treatment of malaria (treat only positive cases) and thereby reduce costs. Although this would seem commonsensical, there is evidence from some quarters that even in the presence of a negative result, health workers continue to prescribe anti-malarials. The philosophy of the NMCP in this regard is that "Every person with fever deserves confirmation of their diagnosis of malaria." However, it is also recognized that accurate diagnosis of all cases is not financially feasible or practical.

Blood smear examination with Giemsa stain remains the mainstay of malaria microscopy in Tanzania. Giemsa microscopy in being used in all other facilities outside of those that have Japan International Cooperation Agency (JICA) support (see below). The NMCP estimates that only about 500 facilities out of

[15] Dege means convulsions (especially of small children) in Swahili.

approximately 5,000 have a working microscope. Facilities that have working microscopes tend to be more sophisticated facilities such as district or regional hospitals and health centers. However, 70 percent of febrile illness is seen in primary level facilities where there is usually no microscope. The NMCP estimates that approximately 4.5 million microscopic tests per year are conducted. Of this total only about 2 million are positive. Nonetheless 16 million individuals are treated for malaria mainly using clinical diagnosis each year in public health facilities in Tanzania.

| KEY FINDINGS |
| --- |
| Only 10% of facilities have a microscope |
| AO diagnostic method only available in higher level facilities |
| NMCP will implement RDTs in selected districts |
| Early evidence in Zanzibar shows that RDTs are a viable option |

JICA has worked with the NMCP since 1993 on improving malaria diagnostic capacity. JICA has introduced the Acridine Orange (AO) method for diagnosis of malaria in higher level facilities. The JICA project has trained more than 400 laboratory technicians and assistants in the AO method and has provided microscopes to more than 70 facilities (generally national, regional and district hospitals and some health centers). In 1999 the NMCP adopted AO as one of its standard diagnostic tests. Unfortunately, there have been problems with monitoring both of equipment, supplies and laboratory technicians. JICA's new (June 2004) program seeks to improve the current situation by: 1) advocating with District Medical Officers (DMO) and Regional Medical Officers (RMO) to ensure their commitment to high quality AO testing; 2) providing 50 additional AO microscopes (some to health centers); 3) training additional laboratory technicians (12 from mainland and 2 from Zanzibar); and, 4) strengthening systems to monitor laboratory practice of AO tests. JICA officers do not contemplate the introduction of the AO method at dispensary facilities.

Another avenue for improving diagnostic capacity is the rapid diagnostic test (RDT)[16]. These tests require minimal training (no microscopy is involved), are low in cost (USD $0.50 -$0.90 depending on the type of test) and give results relatively fast (10--15 minutes). The main drawback to the tests is that some of them are unstable in areas of high temperatures and humidity and would require a "cool" chain to maintain their accuracy.

WHO recommends the use of RDTs in adults, pregnant women and children over five in areas of low to moderate malaria transmission. In these areas children under five will continue to be managed according to the IMCI principles on the basis of clinical evidence of infection. Suggestions have been made in Tanzania that the RDTs be reserved for use in diagnosing adult malaria cases, particularly in settings with low or moderate transmission.

The choice of RDT is dependent on the prevalence of malaria and predominant malaria parasite species. The NMCP is seeking to implement RDTs initially on a limited basis in 10 of the 114 districts in the mainland with a population of 2.5 million and later expand it to other lower level health facilities. The NMCP estimates that approximately USD $ 500,000 yearly will be needed to buy tests. In

[16] RDTs are also known as "Dipsticks" or Malaria Rapid Diagnostic Devices (MRDDs)

the case of Zanzibar, the ZMCP wishes to implement RDTs nationwide. Their initial estimates will required approximately 500,000 RDTs per year. Costs for training, logistics, and training materials have not been estimated and a definite plan for this has not been made. The usefulness of the test is based on the assumption that health workers will provide treatment only to positive cases. However, there is some evidence that this may not be so and that treatment of negative cases persists beyond the implementation of RDTs. Health workers may need to be specifically trained on what to do when an RDT is negative. Medecins sans Frontieres (MSF) has implemented RDT in Zanzibar on a trial basis and early results show an abrupt decline in malaria diagnosis of up to 50 percent. Timely and effective supervision of health workers conducting RDTs is believed to have had an impact in health workers diagnosing and treating fewer malaria cases.

## *Malaria Case Management*

The most important issue facing the NMCP regarding case management of malaria is the issue of the introduction of ACT. In August of 2004 the Task Force on Malaria Treatment Policy[17] met to discuss the potential of changing the treatment regimen from SP to a more effective anti-malarial. Even though SP had only been introduced in 2001, data from 8 sentinel sites (Kibaha, Kigoma, Dodoma, Mwanza, Masai, Kilombero, Kyela and Muheza) showed steadily increasing resistance to SP. Clinical treatment failure rates topped off at 22.8 percent while parasitological failure rate increased to 44.9 percent. Resistance to Amodiaquine was also analyzed—4.7 percent treatment failure and 18.7 percent parasitological failure. Data from other sites in the country confirmed increased resistance. These rates are above the WHO-recommended cut off failure rate of 15 percent parasitological and clinical failure. Sophisticated modeling of the cost effectiveness of such changes shows that the change is justified.[18]

The Task Force recommended that Tanzania change[19] from SP to ACTs for malaria case management.[20] The preferred choice for the change was a fixed-combination formulation of artemisinin of which there is only one; Artemether-Lumefantine (Coartem®). Although this option is expensive, the Task Force suggested that more cost-effective options could be explored when they become available.

The NMCP has ordered 8.7 million courses of treatment of Coartem from Novartis through WHO for the first 6 months of implementation (2006). Quantification of ACT need was done using SP consumption estimates to determine the number of malaria cases in a range of standard facilities acting as sentinel sites. These will be delivered in two shipments in January and March 2006 respectively. A second order will be placed of the same quantity for the following

[17] The Task Force on Malaria Treatment Policy was first formed in 1998 with support from WHO-AFRO to examine chloroquine resistance. This lead to a change in policy to SP in 2001. The task force met again in 2004 to examine the emerging pattern of resistance to SP.
[18] Coleman, Paul G. et al. A Threshold analysis of the cost-effectiveness of Artemisinin-based combination therapies in sub-Saharan Africa. *Am J Trop Med Hye.,* 71 (Suppl 2) 2002, pp. 196 - 204
[19] Except for Intermittent Preventive Treatment (IPT) in pregnancy.
[20] Anti-malarial combination therapy is the simultaneous use of two or more blood schizonticidal drugs with different biochemical targets in the parasites and independent modes of action.

six months. Resources for the purchase of ACTs come from the fourth-round proposal to the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFTAM).

The NMCP plans to begin ACT implementation in April 2006 after receiving the first two shipments of Coartem. The country hopes to use the experience from the SP change to implement a country wide implementation using staggered deliveries of the treatments to the health facilities. Experience in delivering ACT for routine treatment of malaria at health facilities in Zanzibar and Rufiji District (through CDC/ USAID support) will also be helpful. Approximately 9,000 health workers will be trained in the use of ACT.

Presently, the mainstay for case management in children is the IMCI strategy with current coverage[21] of over 90 percent of the districts. Additional training is conducted by the NMCP that includes management of malaria in adults. NMCP training, besides training for the new ACT treatment, includes training for severe malaria and drug stock management.

| KEY FINDINGS |
| --- |
| ACTs are expensive for the general population |
| Funding for ACTs by GFTAM goes only through mid 2007 |
| Training for ACT has started (Aug 2005) |
| Scarcity of ACTs in the global market |

The first draft of ACT guidelines has been completed and it is currently being circulated for comments both inside and outside the country. The draft will be used as an orientation guide during the first training of trainers in mid-August 2005 (beginning in Iringa) after which they will be finalized. Resources for printing of the new guidelines are available as part of the GFATM grant. NMCP will use a cascade training scheme beginning with national trainers through to the peripheral levels. It is expected that this will be completed in November 2005. Upon finalization of the new guidelines, the IMCI training manuals, charts and algorithms, the reproductive health guidelines and any other guidelines with a malaria component will then be revised to include the new ACT as well as issues of laboratory diagnosis.

The change to ACT will require the re-training of approximately 9,200 health workers by the NMCP and IMCI. The NMCP course is a three-day course focusing on the new ACT treatment, intermittent preventive treatment in pregnancy (IPT) and drug management (which includes a component of inventory management). The IMCI course will be modified to also include ACT treatment focusing on children under five years of age. Costs for training all health workers in the country in the NMCP course have been estimated at around USD $1.2 million. For the IMCI course, which is 11 days long, the estimate is USD $6.5 million. Training in IPT is being done through the Tanzania Net Voucher Scheme (TNVS) by World Vision and Care and will be completed by June 2006 (See below IPT).

There is little provision in the entire scheme for follow up and supervision after initial training has been done. While an extension of the World Vision/Care

[21] A least one health worker trained by facility

contract will enable them to do this for ITNs and IPT for one year, there are no provisions for case management follow up.

The Tanzania National Formulary (TNF)[22] is currently being printed. Therefore, an addendum incorporating any new recommendations will have to be made. The National Essential Drugs List of Tanzania (NEDLT) is currently being revised and will need to incorporate the new treatment however these processes will only begin when an official announcement of the new policy is made.

## Top ACT Issues

Funding for ACT is only for public sector and Non-Governmental Organization (NGO) health facilities—retail private sector provides approximately 70% of all treatment for uncomplicated malaria

Re-training health workers - cost, and implementation at district level

Availability of ACT in the global market low, drives prices to untenable levels for MOH

GFATM funding for ACT will only last for 2.5 years

Ensuring adequate follow up and supervision of HW

Ensuring adequate linkage to IMCI initiative

Greater collaboration is needed between NMCP, TFDA and MSD

Artemisinin mono-therapy in the private sector

Community/Home management of malaria

Registration of Coartem® needs to be renewed by Novartis

The implementation of the new policy on ACT will have a significant impact on the costs of malaria case management in the public sector in Tanzania. The cost for Coartem® is approximately USD $2.4 per adult dose as compared to SP which is USD $0.12. An analysis by Partners in Health Reform (PHR) Plus of the financing requirements of ACTs in mainland Tanzania (February 2005) showed that there will be significant gaps in financing. For years 2006, 2007 and 2008, the deficit will be approximately USD $1.5, 9 and 29 million respectively. When GFATM Round 4 funds end in mid-2007 the gap in years 2009 and 2010 will jump to around USD $48 – 49 million each year. These figures are for supplying public health facilities only. The deficit grows even larger if private drug sellers are considered or if utilization of the public sector increases (as has been noted in

[22] Last revised in 1998

trial CDC-Impact facilities). It is interesting to note, however, that artemisinin-based drugs, both combined or in mono-therapy, are widely available in the private sector. Currently, fourteen artesunate products are registered with the TFDA—13 as mono-therapies and 1 as a combination with mefloquine (Manufactured by Mepha), 12 artemether products (including Coartem® and 4 dihydroartemisinin products.

The GFATM Round 4 proposal sought a total of $ USD 90.45 million for support of the effective treatment of malaria and epidemic control. The final amount was USD $54,201,787, 85 percent of which will be used for procuring ACT (Coartem ®). The end date for this grant is May 31 2007, at which time other cheaper sources for procuring ACTs may need to be identified.

Availability of ACT from manufacturers will continue to be a challenge. Coartem® is still under patent and it is exclusively manufactured by Novartis. The GFATM agreement limits Tanzania to purchasing only WHO-approved ACTs, which at this moment means exclusively Coartem® because of lack of other qualified products. In a 2001 agreement with WHO, Novartis committed itself to supplying Coartem® at subsidized costs for public health use and to supply global needs (Novartis is not interested in supplying the private sector). However, on November 8th 2004, WHO notified MoHs that due to high demand and to lack of supply of the active ingredient, Novartis would be unable to produce enough Coartem® to supply global needs. This deficit was projected to last at least until March 2005. However, by June 2005 WHO was still predicting a shortfall of Coartem®.

Novartis announced in December 2004 that it had enough raw material to produce approximately 60 million courses of Coartem®. However, because deliveries of raw materials will occur in the second half of 2005, the company estimates only half of the courses will be produced, with half (15 million) being available in the last quarter of 2005. These 30 million doses represent about half the amount WHO expects will be needed to meet public sector demand in 2005. The 11 countries that have already started procuring Coartem® for 2005 will receive a total of approximately ten million average treatment courses. The nine countries that have officially adopted Coartem®, of which Tanzania is one, into their anti-malarial treatment policies and are planning to procure and use this medicine in 2005, should between them be able to obtain approximately a total of 20 million treatment courses. In the event demand exceeds availability, WHO is establishing a system to prioritize requests from countries based on a number of specific objective criteria, including documented resistance to other anti-malarial drugs and the need to implement their new ACT policies.[23]
Recently the NMCP received notification from WHO that its request for ACT from Novartis, at least for the first half of 2006, will be honored. The NCMP expects to receive a total of 8.7 millions courses of Coartem® total, staggered over two deliveries; half in January 2006 and the other half in March 2006. The order for Coartmen® for the second six months of 2006 has not been placed yet. The NMCP estimates that it needs approximately 16 million doses a year to fill the needs in the public sector.

[23] News-Medical.Net: http://www.news-medical.net/?id=7025. Dec 2004

According to the MoH the agreement with GFATM, Coartem® will be purchased through WHO. However, WHO charges a 3 percent overhead cost. The NMCP believes that purchasing directly from Novartis will produce savings. It is unclear whether Novartis would be willing to sell directly to national programs at the WHO rate outside the WHO mechanism.

Other options for supplies and other ACTs need to be considered. Three other companies have been pre-qualified by WHO to sell other WHO-recommended ACTs. The three other suppliers are Sanofi of France, and IPCA and Cipla of India. However, none of them currently produce artemether/lumefantrine. Following on the original recommendations of the Task Force, Tanzania may need to explore other types of ACTs. One such ACT that may be available within the next 18 – 24 months is Artekin (dihydroartemisinin – piperaquine). The Medicines for Malaria Venture (MMV), a Geneva-based non-profit organization that helps discover, develop and deliver new affordable anti-malarials, has recently visited the country and may be an excellent partner in reducing the dependency on ever-changing supplies of Coartem®. However availability to purchase other ACTs using GFATM funds will depend on them being pre-qualified by WHO or registered with a stringent regulatory authority.

Growing Artemisia annua in Tanzania to help increase the supply of artemisinin is currently under way. Given that it may take 5 – 7 years for a synthetic replacement of Artemisinin to be available (some experts say it may be as long as 10 – 12 years)[24], it would seem that growing Artemisia annua is a commercially viable approach to increasing supply of Artemisinin. In a recent study (Oct 2004) TechnoServe Tanzania concludes that *"there is potential for good returns to farmers from cultivating Artemisia annua in Tanzania and Kenya and attractive returns for entrepreneurs such as the East African Botanicals Limited (EABL) to invest in extraction facilities concentrating on artemisinin."* The study also concludes that there are sufficient land available and adequate incentives to make growing Artemisia annua a good choice over other cash crops for most farmers.

The viability of extraction of active ingredients and their conversion to Artemisinin derivatives (dihydro-artemisinin, artemether, artesunate and arteether) in Tanzania is less clear. So far there is only one company constructing extraction facilities for artemisinin in East Africa, with financial support from Novartis, suggesting that this production is likely to be fully purchased by Novartis. According to TechnoServe Tanzania, Shely's Pharmaceuticals and Tanzania Pharmaceutical Industries (TPI) have expressed interest in investing in artemisinin extraction and later in the full scale production in Tanzania. Both companies are already producing mono-therapy artesunate for the local market and obtain their raw material from abroad. The NMCP, however, has expressed concern that local production of artemisinin may not stay in Tanzania, but rather be exported to higher paying clients (as is occurring with long lasting insecticidal nets manufactured in Tanzania. See below). Even if locally produced artemisinin stays in country, it is likely that the costs in the local market may not be reduced.

[24] Production of Artemisia annua in Kneya and Tanzania and Extraction of Artemisinin in Tanzania and Kenya. *TechnoServe – Tanzania.* October 5, 2004.

Several surveys conducted in the last few years show that malaria drugs are generally available in public health facilities. WHO health facility survey in 2003 found that the index of availability of oral treatments for children was 11 out of a possible 13—including SP.[25] The index for availability of injectable drugs found that on average 6.9 products out of possible 7 were found in facilities. The DELIVER Project also carried out a health facility survey that showed that SP was generally available. SP was available[26] on the day of the survey in all warehouses, hospitals, health centers and dispensaries (except two). SP was available in 83 percent of health centers. Dispensaries had SP in 94 percent of cases. DELIVER's survey looked at availability of drugs in NGO-run facilities and found that although they fared less well than their government counterparts, they had most of the drugs available.. The NMCP's health facility survey showed that 97 percent of facilities reported no stock outs of SP in the three months before the survey.

A mini sample survey of some private pharmacies carried out in Dar es Salaam during the course of this rapid assessment on the type of anti-malarials available and their prices is shown below. The cost of these medicines in the private sector ranged from $5[27] for mono therapy to at least $9 for combined therapy.

Table 5: Anti-malarial Drugs Found in the Private Sector Pharmacies and Costs

| Drug | Cost (TS) |
|---|---|
| Fansidar | 300-350 |
| Artesunate (local) | 1,500-2,000 |
| Coartem (Norvatis) | 8,000 – 9,000 |
| Chloroquine | Not stocked |
| Halfan | 12,000-13000 |
| Arinate (Dafra) | 5,500-6,000 |
| Artemether | 3,500 -6,000 |
| SP(Roche) | 1,200-1,300 |
| SP Other | 275-325 |
| Metakelfin | 300-325 |
| Amodiaquine | 300-325 |
| Quinine | 2,000-2,500 |
| Artesunate (India) | 2,500-3,000 |
| Artekin | 4,500-5,000 |
| Artesunate (Sanofi) | 6,000-7,000 |

It must be noted that no anti-malarials were available in the duka la dawas (drug shops).

The main suppliers to the private sector are Salama pharmaceuticals, JD pharmacy and Nkurumah pharmacy which supply mostly generics. 42 percent of children

[25] IMCI Health Facility Survey, MoH. Dar es Salaam. August 2004.
[26] "Available" was considered when at least one dose of the product was in stock.
[27] At USD $1 = TSh 1,100

under 5 years obtain treatment from shops even though mothers know that treatment will be free in the public sector. Approximately 16 percent of the population lives farther than10km from a health facility. There is a limited distribution system at the levels where the poorest of the population live. Therefore, while the availability of a more effective drug in the public health facilities may increase their utilization, there will be a significant proportion of the population that will still seek treatment for malaria in the private sector. To ensure equitable access to these populations at risk of malaria, it will be essential to find innovative ways to deliver anti-malarials though the private sector at an affordable price. Coartem® is currently available in the private sector for USD $8-9. This price is out of reach by the majority of the populations at risk of malaria. While the NMCP recognizes that this fact must be dealt with in the near future, discussions on private sector delivery have not proceeded beyond this recognition. The matter is further complicated by assertions that Novartis is not interested in working in the private sector even if supply to the private sector goes through the public sector, although this option has not been explored yet. Ways to deliver sustainable subsidies using public/private partnerships will be necessary to reach the populations that do not seek treatment in the public sector.

There are no import taxes or value added tax (VAT) on pharmaceuticals. However, all imported products incur a charge of 2.5 percent payable to the pharmacy board (importation fee).

## *Drug Management*

The Medical Stores Department (MSD) is responsible for procurement, storage and distribution of medicines to all public sector facilities. There is a parallel supply system, Mission for Essential Medical Supplies (MEMS) that supplies Mission facilities. For this service MSD charges the MoH 15 percent of the shipment costs. Only drugs that are under the National Essential Drugs List of Tanzania (NEDLT) are supplied.

The procurement of Coartem® as described above will be done under WHO-agreed procurement mechanisms with Novartis. Unless the government is able to negotiate direct procurement from Novartis, the MSD responsibility will begin when the product lands in Tanzania. MSD will be responsible for clearance, storage and distribution (and re-packaging, if needed) of all health products for the MoH. Usually it takes 14-21 days for goods from arrival at the port to storage at MSD.

While the MSD has a system of open competitive tendering for all government procurements, the government policy allows for single or limited source products to be procured without open tenders.

The MSD has national and zonal warehouses and while currently there is little storage capacity to accommodate large numbers of stocks, they have recently acquired an additional warehouse that will be used for malaria and other selected drug products.

Two systems of distribution exist currently in Tanzania; the "push" system which uses Essential Drug kits and the "pull" or indent system. In the former, each level of health facility receives a pre-determined quantity of kits of standard content while in the latter facilities decide on the quantity of products that are required and order these from MSD accordingly. Tanzania is in the process of converting the entire country to a pull system. So far, 47 districts out of a total of 120 are implementing a pull system while the rest still receive kits. It is expected that all the districts will convert to the indent system by 2007. There will be a need to assist the health facilities in the districts under the indent system to estimate their own needs for the new first line ACT as they will have little experience on the quantities needed without any historical consumption data.

MSD distributes health commodities to all the MSD zonal stores which supply the districts. The responsibility of MSD ends at district level. The DMO's office supplies health facilities within the district.

Although orders are placed by MSD annually (following the annual tender), kits are delivered every two months. In addition MSD keeps 2 months of buffer stock. Under the indent system, deliveries are done every 3 months and three months of buffer stock is kept at MSD. Anything with an expiry date of less than 3 months is not issued.

Health facilities send orders directly to MSD, but the DMO distributes them from the district level downwards. The health facilities are theoretically supposed to send copies of the orders to the DMO, but in practice they do not. The district has its own funds for purchase of the drugs. However, the bottom line is fixed according to the kit budget.

The contents of the kits are determined by the Drugs and Therapeutics Committee. Under the push system, the NMCP instructs the MSD what quantities of anti-malarials to include in the kits. Currently, the kits contain SP, amodiquine and quinine. The SP for malaria treatment will be replaced with Coartem®. However, consumption data for SP for IPT only is not available and the quantity of SP to replace has not been determined yet. Kit items have not been revised yet. SP quantities have already been reduced partly because excess quantities had previously been supplied due to errors in calculating need[28]. There are large stocks of SP—more than is needed for IPT—that are likely to expire. Amodiaquine has not started to be phased out yet but it is expected that quantities will start to be reduced. While an implementation plan exists outlining the broad steps and the training plan, a detailed distribution plan that includes quantities of ACTs to be supplied to each district, the method for distribution and timelines for each step of the process has not been developed. Not addressing these details may adversely affect the availability of an uninterrupted supply of ACT's to health facilities.

A new tender for kits is being prepared for October 2005. It is expected that these new kits will contain the revised list of anti-malarials. Expected delivery is April/May 2006 (6 months after tender). This coincides with the expected date of

[28] When Tanzania changed from chloroquine to SP, the quantity of SP to be ordered was substituted tablet for tablet for CQ resulting in excess SP stock (chloroquine tablets are taken every 6 hours over the course of four days while SP tablets are taken as a single dose. A complete dose of CQ requires four times as many tablets as a complete dose of SP.

implementation of the new ACTs. It will be crucial for MSD and the NMCP to liase and plan closely the deliveries so facilities have the new first line drug at the same time as the IEC messages are transmitted and early stock outs or wastage are minimized.

Meetings between the MSD and the NMCP were conducted two weeks before this rapid assessment to discuss the logistics of supplying the new ACTs. As Coartem® procurement is carried out under a different system from the other drugs in the kits and the kits already arrive packed at MSD, there are two options; the kits will either have to be repacked by MSD so that the Coartem® can be placed in the kits or, there will need to be an additional kit for the Coartem®. There have been discussions that suggest that the latter option may be more feasible due to the bulky nature of the prepackaged Coartem®.

| KEY FINDINGS |
| --- |
| ACT not included in current drug kit |
| Leakage of ACTs may be a problem |
| DMIS is poor and needs urgent support |
| ACT nor yet approved for use in lower level facilities |
| District or facility level quantification of drug needs not available |

There is a repackaging facility at MSD. The cost for re-packaging (for items under the indent system) is TSh 20,000 (USD $18.18) per facility. It has not been determined what the charge would be if the new kits will have to be re-packaged. MSD has requested NMCP to provide a sample in order to determine costs.

There are no plans for additional security for ACTs. Anti-retro virals (ARVs) and narcotics are kept in locked cages within the warehouses and trucks are always locked during the dispatch process.

Currently, when MSD receives products the batch numbers and expiry dates are recorded and there is a system for issuing products that have shorter expiry dates first. There are no systems for product exchange among the districts. However, near expiry products in a facility may be given to another facility within the same district that is likely to consume it before it expires. However this will depend on the initiative of the district pharmacist and there are no set procedures to ensure that this occurs. There are no systems to return near expired products to the MSD. Expired products are destroyed at the district level.

MSD has had managerial problems in the last 18 months, partly due to the departure of its Director General and the delay in appointing a new one. Despite its inventory value being at its highest level ever MSD has had problems with procurement, availability and supply. To complicate matters, DANIDA will not be replacing its technical advisor at MSD. For the

MSD also does random sampling and takes the samples to the Tanzania Food and Drugs Authority (TFDA) or the government laboratory for testing. In addition some samples are taken at random and subjected to testing using a laboratory at MSD itself. TFDA also randomly collects samples from MSD for testing (particularly anti-malarials, tuberculosis (TB) medicines, anti-retrovirals and some antibiotics). TFDA authorizes import of all products which are also inspected for quality at the entry point. The registration procedure also requires product quality testing and GMP inspection. However, in the case of Coartem® which has been

pre-qualified by WHO, the TFDA has an exemption mechanism for inspection requirements. In the private sector, TFDA carries out random post-marketing surveillance to test for product quality.

There is a gap in information exchange from the MSD level to the peripheral levels mainly due to the decentralized system. Currently with the indent system, there are delays with facilities bringing orders due to a lack of experience with forecasting needs. Furthermore, Drug Management Information Systems (DMIS) are poor and there is a lack of consolidated data at the various levels on utilization or consumption.

Currently all medicinal products for consumption in Tanzania must be registered by the TFDA. Products are registered for five years after which the registration must be renewed. The process of renewal is simple and requires the manufacturer to fill a series of forms. New data are usually not required. Rapid Diagnostic Tests are governed by the laboratory services department of the MoH and do not require registration by TFDA. Coartem® (artemether/lumefantrine, 20/120) was registered by TFDA in June 2000. The product registration was due for renewal in June 2005. At the time of conducting the interview with the head of registration at TFDA, no renewal for Coartem had been received. Although the registration for Coartem® has expired, the TFDA will honor their registration provided the manufacturer submits the renewal soon.

WHO now recommends that Coartem® be used for three days (6-doses) in high transmission areas such as Tanzania instead of the original recommended duration of two days (4 doses). For the purposes of registration, the increased duration of treatment requires a notification by the manufacturer to TFDA by way of a letter. No new registration for the change in duration of treatment is required and no new dossiers need to be submitted.

In Tanzania the doctor/population ratio is 1: 25,000 as a consequence care in the periphery is provided mainly by health auxiliaries of various kinds. To ensure access to Coartem®, it must be available in dispensaries where the majority of the population seeks care. However, any medicine that requires a prescription may not be used or supplied at the dispensary level. It will thus be necessary to deregulate Coartem® from a prescription only medicine to an over the counter medicine (or on the General Sales List)[29]. This is done by the National Therapeutics Committee (NTC). There are currently discussions being carried out at the MoH on this process. In order for this process to occur, the NMCP must make this recommendation to the Chief Pharmacist who in turn will present this to the NTC. On agreement, they will signal the TFDA for adjustment of the National Formulary and the Essential Drugs Lists for the various levels of public facilities. At the TFDA this must go through the legal committee. This process can take a few months as the NTC does not meet often.

The legislation authorizes the TFDA to register a new class of drug shops which are authorized to sell a limited list of treatment-only medicines--the Accredited Drug Dispensing Outlets (ADDO). These will be privately operated outlets

[29] There are four categories of drugs in Tanzania; Narcotics, Prescription Only Medicines, Pharmacy Only Medicines and Over the Counter Medicines/General Sales List

authorized to sell a range of essential drugs classified as prescription-only with training and supervision from national and local drugs regulatory authorities. ADDOs will eventually replace Part II drug stores. Currently only about 100 ADDOs exist in the Ruvuma Region where the concept was pilot-tested by TFDA and MSH's Strategies to Enhance Access to Medicines project (SEAM). In 2005-2006 the program will be rolled out to 2 additional regions: Morogoro, with support from USAID, and Rukwa, with direct support from the Government of Tanzania. No resources are as yet available for providing a subsidized ACT through these shops, but it would be relatively straightforward opportunity for a public/ private sector initiative.

In addition to its functions as a regulatory body and product quality assurance, the TFDA also is responsible for monitoring of adverse drug reactions (ADRs). The pharmaco-vigilance system in Tanzania is based on a system of passive reporting. All facilities and manufacturers are provided with stamp prepaid forms to return to zonal centers in referral hospitals for reporting any ADRs to drugs. There are plans to work with Ifakara Health Research and Development Centre (IFHRDC) to develop a combined system of active and passive surveillance. Under this system, regional hospitals will collect this information and send it to the central level. There are plans for conducting a training of health workers in ADR monitoring as well as equipping centers with computers connected to the central level to enable easy information flow. Funds for this were requested as part of the round 4 proposal to the GFATM.

### *Intermittent Preventive Treatment*

The MOH policy for ante-natal services includes two doses of SP to be given in the second and third trimester of pregnancy. Implementation of this policy began with cascade training from national to district level, resulting in at least two trained trainers in each district. The district Council Health Management Teams (CHMT) are responsible for funding and implementing the health facility training within each district. This implementation has been described as very spotty. A survey of non-randomly selected health facilities undertaken by the NMCP in mid-2005 found that 80 percent of pregnant women attending ante-natal care (ANC) clinics had received IPT with SP. The Demographic and Health Survey (DHS) conducted in 2004 found that 94 percent of pregnant women had attended ANC at least once, but only 18 percent reported receiving IPT. The DHS data is likely an under-estimate, and somewhat misleading, as the time period covered by the DHS is five years, and the IPT implementation has only been in the past year.

SP for IPT is procured by the MOH, and distributed as part of the standard "kit" in districts with the push drug management system, or ordered by the district pharmacists in those districts using the indent, or pull, system. As SP is the current first-line anti-malarial treatment, supply for ANC is combined with supply for case management at the health facility level. The team heard an anecdotal report of one hospital where a stock-out of SP occurred in the ANC department while stocks remained in the same facility for case management. There is a strong need for improved management of drugs, which is further discussed in the section on Case Management of this report.

As part of the TNVS to provide subsidized ITNs to pregnant women via ANC, World Vision and CARE began providing training at the sub-district level in September 2004 for ANC staff including both voucher use and IPT. This training program is currently about halfway through its planned course, with 3216 providers trained as of June 2005. They anticipate completing the training across the nation in February 2006, and to complete mopping up training by June 2006.

Drug resistance monitoring is done as part of the MOH routine activity, with funding from the MOH budget. The sentinel sites are managed by National Medical Research Institute (NIMR), IHRDC, RDC, and Muhimbili University College of Health Sciences. The standard WHO protocols use children under 5 to monitor drug resistance, and the link to clinical outcomes in pregnant women is a research question currently under discussion at the global level. With resources from CDC, IHRDC is conducting one study (currently at 70 percent enrollment) which will include efficacy of IPT in pregnant women using SP, as well as with SP+As. Preliminary results are expected by mid-2006.

WHO recommends that in areas where ≥ 10 percent sero-prevalence of HIV IPT be given monthly in pregnancy. This policy has not been implemented in Tanzania where sero-prevalence estimates from nationally representative surveys are 9 percent. Prevalence is almost certainly higher now. In many areas it has been >10 percent for some time. In light of this, there is a need to revisit current IPT dosing policy in Tanzania.

Gaps in the IPT program identified by partners included supply irregularity due to poor drug management practices in some districts and facilities, a lack of a strong and coherent communications strategy to address consumer and provider concerns about SP lingering from some sensational press coverage early in the policy change process to SP back in 2001, and inadequate supervision at the district level. Both World Vision and the JHPIEGO/ACCESS project are planning to address improved supervisory tools and training for Focused Ante-Natal Care (FANC) in the next year, in conjunction with the Reproductive and Child Health Unit at the MOH.

Recent research[30, 31] in Tanzania has shown that IPT with SP or amodiaquine in infants can reduce the rates of clinical malaria and severe anemia. WHO is looking into the issue, if verified, IPT in infants may be another intervention that could further help reduce morbidity and mortality in Tanzania.

## *Referral*

Unfortunately data on issues related to referral are lacking. Given that the appropriate completion and management of referral—usually of severely ill individuals—is critical for impact on mortality, PMI must consider referral as one

[30] Schellenberg, D. et al. Intermittent treatment for malaria and anemia control at time of routine vaccinations in Tanzanian infants: a randomized, placebo-control trial. *The Lancet: Vol 357*. May 12, 2001.

[31] Massaga, J.J. et al. Effect of intermittent treatment with amodiaquine on anaemia and malarial fevers in infants in Tanzania: a randomized placebo-controlled trial. *The Lancet: Vol 361*. May 31, 2003.

of its areas for operational research. A study carried out in 1994 – 1995 showed that only .6 percent of children attending a primary level facility were referred to a higher level facility.[32] 48 percent of referrals took 2 more or days to arrive at hospital. In the study, severe malaria and anemia accounted for 70 percent of all referring diagnosis. 71% of referred children were admitted to hospital.

## *Vector Control*

The National Malaria Control Program uses two approaches to vector control, namely: ITNs and larvicidial schemes. A third method, insecticide residual spraying (IRS) is specified for epidemic response.

## *Insecticide-Treated Nets*

Encouraging the population to sleep under insecticide-treated nets is one of the main preventive actions currently undertaken by the NMCP. Although untreated bed nets can be effective in preventing mosquito bites, insecticide-treated bed nets are significantly more effective as they repel or prevent mosquitoes from biting and shorten the mosquito's life span reducing the chances of transmission. It has been shown that up to 17 – 45 percent of mortality in children under five can be reduced by high use of ITNs in communities. [33, 34]

| KEY FINDINGS |
| --- |
| High use but low re-treatment of ITNs |
| Production capacity of LLINs is limited |
| TNVS does not cover children under five |
| Poor and rural areas lagging behind |

By far the most important vector control method used by the NMCP is bed nets. There are four types of bed nets: 1) Regular bed net that is not impregnated with an insecticide; 2) Bed net that is impregnated with an insecticide every 6 months (ITN) ; 2) Long lasting insecticidal nets (LLIN) that may last 3 - 5years without re-impregnation and up to 7 years as far as the component material is concerned; 4) Same as (2) but with an added resin that would make it long lasting. The chemical used to impregnate nets is a pyrethroid insecticide. The general preference among experts is for LLINs, and of these, those nets made with Olyset™ are the most favored by the NMCP. Olyset™ nets are much more durable--up to five years—and remain active longer than regular polyester nets (which last no more than 3 years)[35, 36] However, Olyset™ nets may not be necessarily favored by consumers as the quality of the fabric is less appealing. Olyset™ nets are manufactured using a plastic (polyethylene) blended

[32] Font, F., et al. Pediatric referrals in rural Tanzania: The Kilombero District Study – case series. *BMC International Health and Human Rights.* 30 April, 2002.
[33] Lengeler C. 2001 Insecticide-treated bednets and curtains for preventing malaria (Cochrane Reviews). *The Cochrane Library, Issue 4:*
[34] Phillips-Howard PA,. et al. Efficacy of permethrin-treated bed nets in the prevention of mortality in young children in an area of high perennieal malaria transmission in Western Kenya. *Am J Trop Med Hyg 68 (suppl):* 23 - 29
[35] Tami, A. Evaluation of Olyset™ insecticide-treated nets distributed seven years previously in Tanzania. *Malaria Journal.* 2004, 3:19.
[36] Erlanger, TE. Field issues related to effectiveness of insecticide-treated nets in Tanzania. *Med Vet Entomol.* 2004 Jun; 18(2):153-60

with 2 percent permethrin. In contrast to the regular, weaker polyester fibers, washing and drying does not decrease the effectiveness of Olyset™--in fact, washing them and placing and placing the washed net in a black plastic bag in the sun to heat up reactivates the chemical release from the nets.[37] In addition to Olyset™ five new long lasting processes are being evaluated. One, PermaNet 2.0[38] has received an interim recommendation from the World Health Organization Pesticide Evaluation Scheme (WHOPES) for use in the prevention and control of malaria.[39] It is produced by the Danish company Vestergaard Frandsen in Thailand and Viet Nam. A chemical binder has been developed that can be used to "lock" insecticides onto fibers making ordinary nets long lasting. Developed by the German pharmaceutical company Bayer, it has been submitted to WHO for approval.

The most recent DHS (2004) shows that almost half the population (46.3 percent) mentions that they own at least one bed net, but when asked specifically about ITN only 14.2 percent overall say the have at least one (See Table 5). Furthermore, children and pregnant women slept under an ITN the night before the survey in only 10.3 and 10.6 percent of the time respectively. Although these numbers can be considered low, in fact when compared to global estimates--15 percent of young children sleeping under a net and only 2 percent sleeping under an ITN[40]--the numbers are encouraging.

**Table 6: Malaria Indicators**

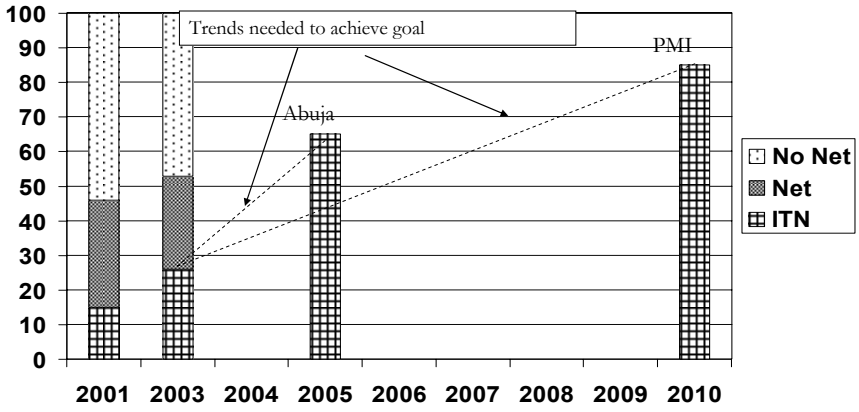
| Indicator | Residence | | | | |
|---|---|---|---|---|---|
| | Mainland | | | Zanzibar | Total |
| | Urban | Rural | Total | | |
| Percentage of household with at least one mosquito net | 73.9 | 35.8 | 45.9 | 64.9 | 46.3 |
| Percentage of household with at least one ITN | 31.6 | 8.0 | 14.2 | 14.0 | 14.2 |
| Percentage of children under five who slept under a mosquito net the night before the survey | 38.3 | 35.6 | 36.1 | 35.5 | 36.1 |
| Percentage of children under five who slept under an ITN the night before the survey | 17.8 | 8.6 | 10.4 | 7.8 | 10.3 |
| Percentage of pregnant women age 15 – 49 who slept under a bed net the night before the survey | 46.9 | 29.6 | 33.0 | 22.6 | 32.7 |
| Percentage of pregnant women age 15 – 49 who slept under an ITN the night before the survey | 16.2 | 9.5 | 10.8 | 3.7 | 10.6 |

Note: DHS 2004. An ITN is a permanent net that does not require any treatment, a pretreated net obtained within the last six months or a net that has been soaked with insecticide within the past six months

[37] If it involves hot water and/or exposure to radiant solar heat.
[38] PermaNet 2.0 is a LLIN in which the insecticide is mixed with a resin coating the netting fibers so that the insecticide is progressively released from the resin even after repeated washings.
[39] Fith update on LLIN. Current Status and Programmatic Issues. Geneva 5/01/2004.
[40] The Africa Malaria Report 2003. WHO - UNICEF

According to the results of the DHS (2004), place of residence has significant impact on the possession/use of any kind of net. Generally, rural indicators are worse than urban indicators, with the exception of children sleeping under a net the night before, where urban and rural populations had similar indicators (38.6 and 35.6 percent respectively). Zanzibar is also behind the mainland indicators—often worse than even rural areas. When compared with data from previous DHSs an encouraging picture emerges. Whereas the 1999 DHS data shows only 21 percent of children under five sleeping under a bed net the night before the survey, in 2004 the figure is 36 percent. Still, the use of insecticide-treated bed nets was appallingly low (10.2 percent).

Figure 3
Children Under-Five Sleeping Under ITNs




Source: Tanzania Roll Back Malaria Consultative Mission (Reaping): Essential Actions to Support the Attainment of the Abuja Targets. Final Version 3.0. 6 January 2004.

There are significant problems with the re-treatment of regular bed nets with an insecticide. A recent household survey reported that up to 52 percent of children (similar to the DHS 2004 results) were sleeping under mosquito nets, but when asked if the mosquito net was appropriately treated the figure dropped to 26 percent.

Figure 3 shows the trend in ITN use and the Abuja Targets and the Malaria Medium Term Strategic Plan (MMTSP) goals, which are the same as the Abuja targets, except that they have been delayed by 2 years.

The costs of nets have been consistently cited as an impediment for poor families. Individuals can purchase nets in the open market or in health facilities. In the open market a variety of nets are available. Most are polyester nets bundled with the insecticide (Ngao). However there are nets on the market of Chinese manufacture that tend to be cheaper but last less than ordinary nets. Costs on the open market vary according to size.

GFATM Round 1 funds are available for supporting the National Insecticide Treated Nets Implementation (NATNES) Program. The NATNETS program is made up of fours components: 1) Tanzania National Voucher Scheme; 2)

Strategic Social Marketing for Expanding the Commercial Market of ITNs; 3) Insecticide Treated Net Cell; 4) Complementary ITN activities. According to the application to the GFATM, components 2 – 4 are fully funded through 2007.

The ITN Cell functions within the NMCP and is supported by the Swiss Agency for Development and Cooperation (SDC) through the Swiss Tropical Institute (STI). The ITN cell is responsible for coordination of ITN activities in Tanzania including the TNVS.

### *Tanzania National Voucher Scheme (TNVS)*

The TNVS is supported by the GFATM, was piloted by UNICEF in 2 districts. It is now being scaled up to a national program that will enable every pregnant woman in Tanzania to purchase an ITN at a greatly reduced price (a mother will pay TSh 500 - 1,500 (USD $.45 - 1.36) while the voucher price is TSh 2,500 (USD $2.27) and will provide free insecticide re-treatment kits at two vaccination milestones of the infant (3 and 9 months). Although this scheme protects children under one year of age, children 1 year – 59 months do not receive subsidized packets of insecticide or nets (children graduate from mother's bed to another once a younger sibling is conceived).

The TNVS was launched in October 2004 and it is expected that by the middle of 2006 all regions will be covered by the program. The three components (social marketing, bed net procurement and community level activities) of this activity were outsourced, marking an important milestone of working with the private sector. A recent audit of a pilot activity however revealed that there were some important problems with the scheme. Many MCH clinics did not give out vouchers to all that should have gotten them. Rather they preferred to sell the ITN themselves instead of allowing the individual to make a choice of where to use the voucher—from private seller for example. In some MCH clinics there were important "leakage" issues. Still, the more philosophical managers say that, even with leakage, the good news is that bed nets will get to the community. Critics have mentioned that even at the discounted amount of TS 500 – 1,500 (USD $.45 – 1.36) the poorest of the poor may not be able to acquire the ITNs.

These deficiencies were identified and addressed following the pilot project. A survey is being conducted to assess the TNVS. Data collection will be in July – August 2005, with a report available no earlier than September 2005. This survey will give a sense of the coverage of the TNVS. Anecdotally it is known that there is a 87 percent redemption rate for the vouchers.[41] If such redemption has been carried out by the intended target audience, then the performance of the TNVS, at least in terms of redemption is on sound footing.

Currently, there are four private companies (A to Z Textile Mills, Sunflag, Motex and Textile Manufacturers of Tanzania Limited (TMTL) producing bed nets in the country. According to some sources, the companies produce enough bed nets to satisfy the local ITN market. A to Z is not only considered the largest net-making

[41] Personal communication, Karen Kramer - National Malaria Control Programme MoH - Tanzania

company in Tanzania, but in all Africa, as well as the first in Africa to produce LLINs. LLINs in Tanzania are manufactured exclusively by A to Z. The Acumen Fund,[42] in collaboration with Sumitomo Chemical Corporation, ExxonMobil, WHO and UNICEF, has facilitated the transfer of the technology for making LLINs from the Sumitomo Chemical Corporation of Japan to A to Z. Additionally, Acumen Fund has given a loan (USD $325,000, 2002) to A to Z to acquire the equipment to manufacture up to 1.5 million LLINs a year. The Acumen Fund Investment Report for December 2004 cites that A to Z is producing 60,000 LLINs a month. However, recent information provided by A to Z clarifies that by the end of 2006 A to Z will be producing closer to 3 million per year with the opening of a new factory. A to Z believes in can produce up to 30 million LLINs annually by the end of 2007.

A to Z is able to mix chemical dyes on-site and can produce the new Olyset™ 2 in a variety of colors. Additionally, A to Z has improved its stitching techniques and reduced the costs of the LLIN to slightly less than USD 5 wholesale. WHO monitors production to ensure that the LLINs produced by A to Z comply with the standards set by WHOPES.

The LLINs produced by A to Z have been mainly purchased by UNICEF for Burundi and Tanzania. Known in the market as Nguvu ya Ajabu (Swahili for Magic Power) LLINs have been distributed locally (Dar es Salaam, Kigoma and Kanga regions) since November 2004. A recent article in TIME magazine highlighted them as one of the Best Inventions of 2004.[43] A to Z has been testing nets as coverings for doors, windows and eaves. Early indications of this scheme are positive.

The cost for an ITN in the private sector is around TS 3,500 and for LLINs is at least double. Bed nets of dubious quality have been detected on the local market. These Chinese imports, which appear to make their way by ground from Kenya and Malawi will be difficult to control.

## Top Issues in ITNs

TNVS subsidy targets only pregnant women. Means slow increase in overall coverage.

Use of ITNs is still very low

Important differentials in urban – rural use of bed nets (Zanzibar)

Regular re-treating, every six months, with insecticide is a serious problem

[42] Acumen Fund is a global non-profit dedicated to setting up financially viable and sustainable enterprises that favor the poor. Set up in April 2001by the Rockefeller Foundations, Cisco Systems and three individual philanthropists it works mainly in health technologies, housing and finance and water innovations.

[43] TIME Magazine: The Most Amazing Inventions of 2004. November 29, 2004.

Ngao (insecticide for re-treatment) is only provided subsidized for infants and not for children 1 year to 59 months

Long lasting ITNs bed nets are the preferred, but they are expensive—at least double the cost of a regular net

SMARTNET is an innovative private-public collaboration that seeks to demonstrate *the extent to which commercial ITN production and distribution can be stimulated whilst ensuring equitable coverage through effective targeting of subsidy.*[44] It involves the MoH, net manufacturers, insecticide suppliers, wholesalers, marketers and others involved with the production, distribution and promotion of nets. Of particular interest is the emphasis that SMARNET places on rural areas, that tend to have the poorest net use indicators, through non-traditional outlets such as "shifting"markets. SMARTNET is responsible for the most recent social marketing campaign "Malaria Haikubaliki" (Malaria is Not Acceptable). This campaign, supported by the President of Tanzania, seeks to reduce the "resign belief" that malaria is just a fact of life. SMARTNET is implemented by Population Services International (PSI) and supported by the United Kingdom Department for International Development (DfID), Royal Netherlands Embassy (RNE) and the Swiss Tropical Institute (STI).

## *Insecticide Residual Spraying (IRS)*

IRS is a controversial intervention for the control of the malaria vector in Tanzania. The controversy rests on five main issues: 1) The expensive human and material infrastructure needed to implement IRS; 2) Sustainability long term; 3) Increased risk of epidemics if stopped abruptly; 4) Dichlorodiphenyl trichloroethylene (DDT) and its impact on the environment; 5) Illicit diversion of DDT to agriculture. A recent (July 2005) technical mission by the African Development Bank (ADB) found tens of barrels of obsolete pesticide stocks stored in sub-optimal conditions. Many barrels had oxidized and were seeping their contents into the ground. The Mainland's current strategy specifies IRS for "hot spots" for epidemics. However, there is no real early warning system at present to justify the widespread use of IRS. There are also concerns as to the cost-effectiveness of IRS and its acceptability to communities. Potential for limited use could be the spraying of public facilities.

| KEY FINDINGS |
| --- |
| IRS is specified for emergency situations (e.g. epidemics, refugees) |
| Problems with storage and disposal of insecticides |

Epidemic malaria occurs in about 10 districts in Tanzania, in the highland areas (Usambara Mountains, Hanang/Babati districts, Mudoka district in Kagera), and the Southern Highlands (Iringa and Mbeya regions). This are encompasses about 25 percent of the population or almost 9 million people. The

[44] SMARTNET: A Tanzania Public/Private Partnership to Prevent Malaria. PSI – Malaria Control handout. May 2005

most recent epidemics have been in 1998, following the unusually heavy El Niño rains. The consensus of opinion at the NMCP and among other partners in Tanzania is that the main public health burden of malaria is not in the epidemic areas, and as such, IRS remains a secondary priority to rapid scale-up of ITNs to high-transmission, high-mortality areas. IRS is included in the national strategy as a response intervention in malaria epidemics, and is also considered for use in refugee camps.

The NMCP has identified three areas of work for controlling malaria epidemics in Tanzania; forecasting, detection, and response. In terms of forecasting, little work has been done to date, largely because it is a field still very much in development. The Highland Malaria Project (HIMAL), based at the London School of Hygiene & Tropical Medicine (LSHTM) has been working in Uganda and Kenya for several years, and has submitted a proposal to the Gates Foundation for a phase III which would include Tanzania.

Detection: with support from WHO, the NMCP has worked in 9 districts starting in 2002 to train health workers at district and health facility levels to track fever cases on a monthly basis on a chart. They trained on how to determine threshold levels for fever, and on developing response plans. Data is meant to be collected and collated at health facilities on a weekly basis, with reports to the district level monthly. Data managers have been trained at district level, but routine reporting is difficult to maintain. There is a need for mapping malaria risk at the local level, to allow districts to identify particular hot-spots which are more likely, based on past history and geography, to require rapid response. This has not yet been addressed. In one recent epidemic of fever in Lushoto district, the NMCP was able to get rapid diagnostic tests to the field, which showed that the epidemic was not malaria.

Response: while some districts have developed response plans, the current monthly data system is not sensitive enough to provide useful information in time for an adequate response. A weekly reporting system would be better, but communications between health facilities and district level is difficult, especially in the rainy season. Some districts have stockpiled sprayers, spray protective clothing, and IKON insecticide as preparations for epidemic response. Stock management is an issue which requires more work, as there are a number of stockpiles of obsolete pesticides in Tanzania from agricultural and public health use which are now in need of (expensive) disposal. A few districts have access to some personnel who were trained in IRS in the past, but these are few, and scattered. Recently a malaria outbreak in Kagera Region was mainly managed through improved case management, via an infusion of ACTs (artesunate+amodiaquine) to the health facilities in affected areas.

## *Urban Malaria*

Both the Zanzibar Malaria Control Program and the mainland NMCP requested that further attention be paid to urban malaria, in the context of broader mosquito control programs targeting the larval phase. The JICA-supported urban malaria program of the mid-1990's included urban areas of Dar es Salaam and Tanga, and

included both IRS and larval control. One finding of this project was that after a few years of IRS, residents tired of the chore of moving their furniture and refusal rates climbed.
A pilot project in urban Dar es Salaam currently funded by USAID and JICA, as well as the municipal council is measuring the effectiveness of larval control on malaria rates in several urban wards. Baseline data collection has been completed and interventions using Bacillus thuringiensis israelensis (BTI) and environmental management are expected to begin soon.

## *Refugees*

Refugees from conflicts in Burundi, Democratic Republic of Congo, Rwanda and Somalia are living in camps in Western Tanzania. A total of 800,000 refugees, the largest in the African continent, reside in Tanzania.[45] About half live in 11 camps sponsored by the United Nations High Commissioner for Refugees (UNHCR). Approximately 200,000 live outside the camps in Rukwa and Tabora regions. An additional 200,000 people do not have official status. Unfortunately, there are few hard data regarding malaria in refugee camps in Tanzania. One report by Talley (2001) quotes that "80% of deaths in Congolese children younger than 5 years of age in Lugufu camp in Tanzania were due to malaria, diarrhea and pneumonia." Another report estimates that about half of all consultations in Kibondo (2003) were for malaria and approximately 40 percent of all deaths could be attributed to malaria. Among other special problems in refugee camps is the higher prevalence of drug-resistant malaria and inadequate shelters that make ITN use difficult

The main interventions implemented in refugee camps are spraying of common areas and homes and the use of ITNs. These interventions have lead to reductions in malaria incidence wherever they were applied during 2004. Anecdotal reports suggest that the house types commonly found in these camps would lend themselves to effective indoor residual spraying (small houses with mud walls). In the October planning visit, further discussion of the potential for a targeted IRS campaign in these sites (potentially including neighboring villages within a specified radius) should be further explored.

## *School Health*

School health presents an important opportunity to both deal with malaria in the present as well as prepare children for dealing with malaria in adulthood. Although the malaria mortality burden in children is mainly in the under-five cohort, their brothers and sisters of school age also get sick, miss days of school and are an import source of malaria. Presently, there is no active school health program that deals with malaria. However, the World Bank and others are looking into supporting activities designed to increase the awareness of malaria in school age children. Among these interventions could be distribution of bed nets by teachers, Child-to-Child programs and even school-based management of fever.

[45] Rutinwa, B. Identifying Gaps in Protection Capacity Tanzania. UNHCR, 2005.

## *Monitoring, Evaluation and Operations Research*

The Ministry of Health recently revised its facility-based national Health Management Information System (HMIS). It is a relatively bulky system, that—aside from overall utilization figures--provides little information useful to the National Malaria Control Programs. Instead NMCP (mainland) and ZMCP conduct health facility and community surveys, roughly every 2 years. These surveys are used to track indicators developed by the Roll Back Malaria partnership and include coverage estimates for the key interventions. These surveys are conducted quickly but do not include representative sampling. Demographic and Health Surveys are, however completed in a nationally-representative sample and can be a much more reliable source of data on maternal, infant and child mortality. Tanzania also includes a malaria module which provides coverage data for key malaria control interventions. A WHO-AFRO/USG initiative for integrated disease surveillance and response can be adapted for detection of malaria epidemics in the relevant districts.

Tracking the progress toward PMI goals of reducing malaria-related mortality will require additional monitoring and evaluation investments. There is no routine registration of deaths in Tanzania, and methods like the DHS do not produce data on cause-specific mortality. Tanzania is fortunate, however, that a number of districts include populations participating in continuous demographic surveillance systems (DSS). These large data collection systems have been used effectively in the country to evaluate the impact of health interventions like insecticide-treated materials and IMCI. A system of 56 villages is currently being used to evaluate the introduction of ACT. It should be noted that these DSSs are usually established for specific research projects and operate in limited geographic areas. Expanding the approach to additional sites would be helpful for documenting the public health effects that PMI should achieve.

## *Operations Research*

The Round 4 GFATM award that includes funds for ACT also includes support for an operations research program to help inform the roll-out of ACTs. This is managed by staff from the CDC/ IHRDC Malaria Program in Tanzania. In addition, USAID, CDC and the Bill and Melinda Gates Foundation support major implementation research projects around malaria interventions including ACT and IPT in infants. SDC and DfID contribute to operations research on ITNs and TNVS. Other partners active in malaria-related operations research on mainland Tanzania include the National Institute for Malaria Research, AMANET, London School of Hygiene and Tropical Medicine, Swiss Tropical Institute, University of Copenhagen. Researchers from Karolinska Institute, the Public Health Laboratory, and Johns Hopkins University conduct interventions and operations research in partnership with ZMCP and Muhimbili University College of Health Sciences.

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Section 5

# Roles/capabilities/geographic location of partners' malaria control activities

*Ministry of Health/National Malaria Control Program*

The GoT has a well established NCMP. Its main aim is to reduce mortality and morbidity due to malaria in all 21 regions of the country by 25 percent by 2007 and by 50 percent by 2010. Contemplated within this aim are a number of specific objectives:

- Increase the proportion of children with febrile episodes that receive appropriate treatment within 24 hours of onset from 19 percent to 60 percent by the year 2007.
- In children attending health facilities, increase to 80 percent the proportion of clinical malaria cases that are treated appropriately.
- To increase to 60 percent the proportion of pregnant women and children who are sleeping under a properly treated mosquito net.
- To increase to 60 percent the proportion of pregnant women who are effectively protected against malaria with Intermittent Preventive Therapy (IPT).
- To improve the capacity of epidemic-prone districts to recognize malaria epidemics early and respond appropriately.
- To ensure that Tanzanians understand the dangers of malaria and what they, as responsible citizens, can do about it.

To achieve these objectives the MoH has developed a National Malaria Medium Term Strategic Plan 2002 – 2007 in which it outlines four strategic approaches to the problem: 1) improved malaria case management; 2) vector control through the universal use of ITNs; 3) control of malaria in pregnancy; 4) malaria epidemic prevention and control. Operationally these approaches involve demand creation through information, education and communication (IEC), implementation of the IMCI strategy, training of private vendors, improved distribution of ITNs, use of a voucher system to make ITN ownership less expensive, establishment of early warning systems for malaria epidemics, and use of IPT and ITNs by pregnant women. Current guidelines include spraying with insecticides when there is an epidemic. Home treatment of malaria is encouraged but is not overtly promoted.

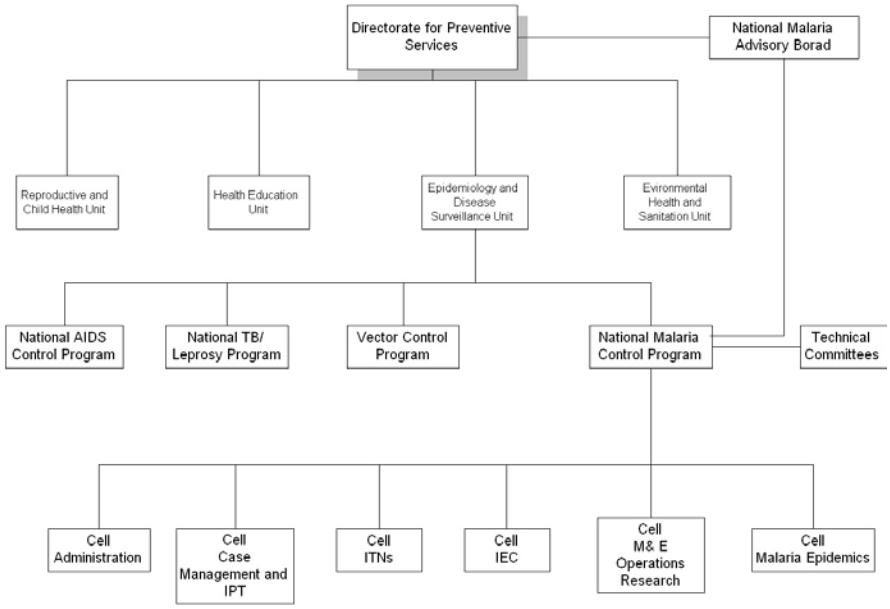
Most work of the NMCP is through direct support to districts with training, guidelines and other activities.

Goals and objectives as outlined in the Medium Term Strategic Plan 2002 – 2007 remain the same in 2005, however, some strategies need updating (e.g. IRS).

| KEY FINDINGS |
| --- |
| Most policies are up to date but some need updating |
| Cell structure of NMCP is effective |
| NMCP is not high enough in MoH organizational structure |
| Some of the coordinating committees are non-functional |

The NMCP is a unit of the Epidemiology and Disease Surveillance Unit, which in turn is part of the Directorate of Preventive Services dependent directly from the Chief Medical Officer. The NMCP has a Program Manager (Dr. Alex Mwita) from whom six management "cells" depend. The cells are: 1) Head of Administration; 2) Case Management and IPT; 3) ITNs; 4) Information, Education and Communication; 5) Monitoring and Evaluation/Operational Research; 6) Malaria Epidemics. Each of the cells has a "Head" who coordinates activities within the cell and responds directly to the NMCP Program Manager. See Figure 3.

Figure 4: NMCP Organizational Chart




The role of the NMCP is to provide leadership, guidelines and technical support to regions and districts throughout the country. This is done effectively, however, a frequent concern expressed to the team is that the NMCP is not situated high enough within the MoH's structure. As a consequence it does not get the recognition and resources it deserves.

The NMCP works in partnership with a variety of institutions, collaborating agencies and NGOs. Presently, partners include WHO, UNICEF, DfID, JICA, Swiss Development Cooperation, Italian Cooperation, Development Cooperation

Ireland and USAID. Locally, it receives support from the National Institute for Medical Research, the Ifakara Health Research and Development Center, Kilimanjaro Christian Medical Centre and Centre for Enhancement of Effective Malaria Interventions (CEEMI).

To coordinate and direct actions the NMCP has established various committees and task forces. The National Malaria Advisory Committee (NMAC) meets twice a year, at least in principle. Its aim is to offer government state-of-the-art technical advice on malaria control. The Inter-Agency Malaria Coordinating Committee was set up to coordinate with RBM partners on issues of planning, monitoring and evaluation and funding. It is supposed to meet three times a year, but at this point it is not functional. Also there are four committees that deal with case management, vector control, monitoring and evaluation and information, education and communication (IEC). ITN promotion is coordinated through the National Insecticide Treated Nets (NATNETS) Programme.

## *USG agencies and implementing partners in Tanzania*

Table 7 shows the main donors to the NMCP and their respective areas of assistance.

Table 7: Main Malaria Donors to NMCP and Areas of Support

| Agency | Diagnostics | ACT | ITNs | | | IPT | IEC Other | IRS |
|---|---|---|---|---|---|---|---|---|
| | | | ITNs Cell | ITNs Purchase | ITNs IEC | | | |
| DFID | | | ● | | ● | | | |
| GFATM | | ● | ● | ● | ● | | | |
| JICA | ● | | | ● | | | | |
| Irish Aid | | | | | | | | |
| Italian Cooperation[1] | ● | ● | ● | ● | ● | ● | ● | |
| Royal Dutch Embassy | | | ● | | | | | |
| Swiss Cooperation | | | ● | ● | ● | | | |
| USAID | | | | | | ● | | |
| CDC | ● | ● | ● | | | ● | | |
| World Bank | | | | | | | | |
| WHO | ● | ● | ● | | ● | ● | ● | |
| UNICEF | | | | ● | ● | | | |

[1] The Italian Cooperation provides a full time malaria professional who works in all areas of the NMCP

## *USAID & CDC*

USG agencies present in Tanzania include USAID/Tanzania, CDC, Peace Corps, National Institutes of Health (NIH) and Department of Defense (DoD). The PMI is fortunate in Tanzania in that there is a remarkably strong, competent and

well-connected presence in both agencies, as well as a network of affiliated implementing partners working in malaria control. CDC and USAID/Tanzania work closely in Tanzania in a collaborative relationship which includes the single largest USG-funded program of implementation and operations research for malaria control (IMPACT – TZ).

CDC is working closely with the Ifakara Health Research and Development Centre on a wide range of malaria-related activities. The results of the collaborative operations research portfolio offer a particularly valuable resource for effective program planning. Through this mechanism a demographic surveillance system covering more than 170,000 people has been functioning since 1998. This system can provide a basis for monitoring and evaluating malaria interventions and is one of the few tools available to monitor malaria-specific mortality. The agency supports a large scale implementation of ACT in Rufiji District which has offered highly effective malaria treatment to more than 700,000 patients since 2003. In collaboration with other Tanzanian and international partners (Tanzania Food and Drug Authority, Management Sciences for Health, Swiss Tropical Institute, Ministry of Health, London School of Hygiene and Tropical Medicine), CDC and IHRDC plan to introduce and evaluate the impact of ACT through private retail sector outlets in Morogoro Region.

USAID/Tanzania's implementing partners include the ACCESS project, managed by JHPIEGO and focused on Malaria in Pregnancy, the T-Mark project managed by Academy for Educational Development (AED) focused on social marketing and communications, the DELIVER project managed by John Snow International (JSI) which is focused on a malaria program advisor (Dr. R. Salgado) and drug management and logistics systems, and the Ministry of Health via the Zonal Training Centers in Arusha and Iringa regions.

USAID/Tanzania's malaria portfolio for FY2005 includes activities in Malaria in Pregnancy, Communications, collaborative support for the Malaria/IMCI District Focal Persons training program of the MOH via the Center for the Enhancement of Effective Malaria Interventions (CEEMI, funded by the Gates Foundation), as well as support for improved drug management and logistics capacity.

## *Global Fund to Fight AIDS, Tuberculosis and Malaria*

The MoH mainland and the MoHZ have successfully submitted two proposals each in support of malaria activities. Table 8 summarizes the amounts and subject for each. By far the GFATM is the largest financing mechanism for malaria.

Round 1 grant for the Mainland was originally USD $11,959,078. However, because of problems with implementation the MoH requested a no cost extension and reduction of the grant to the current amount. The main emphasis of this grant is to support the National Insecticide Treated Nets (NATNETS) Programme, specifically the Tanzania National Voucher Scheme.

**Table 8: Summary of GFATM Malaria Grants to Tanzania Mainland and Zanzibar**

| | Round | Name | Dates | Amount* US $ |
|---|---|---|---|---|
| Mainland | 1 | National Insecticide Treated Nets Implementation Plan | PSD 11-01-03<br>PED 10-31-05<br>PCD 11-31-07 | 8,790,612 |
| Mainland | 4 | Prompt and Effective Treatment of Malaria Cases and Containment of Malaria Epidemics | PSD 06-01-05<br>PED 05-31-07<br>PCD 05-31-08 | 54,201,787 |
| Zanzibar | 1 | Implementation of New Malaria Treatment in Zanzibar | PSD 04-30-03<br>PED 05-31-05<br>PCD 02-28-06 | 781,220 |
| Zanzibar | 4 | Consolidation of Malaria Control Through the Use of Artemisinin-Based Combination Therapy and Insecticide-Treated Nets | PSD 12-01-04<br>PED 11-30-06<br>PCD 11-30-08 | 5,089.361 |

Note: PSD = Project Start Date; PED = Project End Date; PCD = Project Completion Date
* These are total amounts in the grants.

A great concern in both the mainland and Zanzibar is what will happen once GFATM financing for ACTs ends. It is expected that new submissions will made to the GFATM to provide the support needed for the continued purchase of ACTs, however there is no guarantee that this will occur—especially at a time when the GFATM is having difficulties replenishing its funds.[46]

## *World Bank*

The World Bank's support to health in Tanzania (currently comprising US$40 million credit and $25 million grant) is mainly disbursed through the "basket" which pools funds from Danish International Development Agency (DANIDA), Swiss Development Cooperation (SDC), RNE, Development Cooperation Ireland (DCI), GTZ/Kfw, and United Nations Fund for Population Activities (UNFPA) which is in turn disbursed (i) against the MOH MTEF and (ii) as district grants. The equivalent of $0.5/capita is allocated to district grants (although, consistent with the move in President's Office Regional Administration and Local Government (PORALG), the funds are now allocated to districts based upon a weighted formula which considers poverty) and the balance is available to be disbursed against any category of expenditure in the MOH Medium Term Expenditure Framework (MTEF)-- which is agreed upon annually. Annual audits are required for funds used at district level and at the center. District grants are employed per guidelines and per annually-agreed upon Comprehensive Council Health Plans. Annual audits (financial audits & procurement audits), reporting requirements and procurement procedures governing the use of these funds are defined in a Memorandum of Understanding (MoU) between the pooling partners and GOT. The procurement procedures mainly conform to World Bank guidelines, although with recent GOT procurement reforms both guidelines are

[46] Global Fund Observer (GFO) News Letter. Issue 50 – 7 September 2005

substantially aligned. Thus, the Bank's support for malaria in Tanzania equates to the budget for malaria which appear within the MOH's annual (3-year, rolling) MTEF and the district plans.

The World Bank's new "Malaria Booster Program" is an effort by the Bank to resuscitate or reinvigorate its attention to malaria. Although it was initially thought that it might be an allocation of earmarked monies under IDA-14 (the International Development Association's 14th commitment), this has not been the case. Thus, although the Africa Region Vice President has declared an intention to commit at least US$500,000 million to malaria, these funds could only come from the existing IDA resources of each country. That is, there are no resources over and above what is already available in each country—the Malaria Booster Program does not add additional resources for malaria other than what is available in existing credits. Also, the Region cannot mandate how borrowers will allocate Bank funds. Bank financing has to respond to demands from countries, and be consistent with Poverty Reduction Strategy Papers (PRSPs) and Country Assistance Strategies (CASs), which are only updated periodically (providing an opportunity to encourage recipient countries to include malaria). Regardless, increasing the allocation for malaria or health would mean decreasing it elsewhere, such as education or roads. In Tanzania, given the Joint Assistance Strategy (JAS), an increase would simply be disbursed through the mechanism described above and could not be earmarked for malaria.

The World Bank however does remain engaged in malaria. The World Bank worked with its headquarters and USAID Washington to obtain support under PHRPlus to do an analysis of the long-term cost implications -- and options – of moving to ACT. This is a good example of the kind of collaboration between USAID and the Bank on malaria. The Bank sees its particular role in ensuring that the total expenditure program is allocated in a way which efficiently and effectively responds to the burden of disease and is sustainable. The Bank also has a role in the issues of private sector engagement in ITNs (it worked with the International Monetary Fund -IMF) to advocate for the removal of taxes and tariffs on nets), spraying (it has a regional program on safeguards and disposal of insecticides), and possibly school health (as it has experience on incorporating malaria interventions in schools). It also has the ear of the leadership as regards issues such as financing ACTs.

## *WHO*

The world Health Organization is mandated to provide technical support and some financial assistance to the country. It remains the lead technical agency providing direction on issues of health in the country. The WHO country office offers critical support of the GoT, Ministry of Health programs. The Country Office has a dedicated members of staff supporting the various programs such as Disease Prevention and Control, Malaria, HIV/AIDS, IMCI in including Health Systems development.

The Malaria Unit in WHO –Tanzania has two officers (Dr E Kahigwa and Ms R Njau) whose main responsibility is to support the implementation of malaria

control activities in both mainland Tanzania and Zanzibar. The officers' work in close collaboration with the National Malaria Control Programme in supporting the implementation of programme activities as described in the strategic plan. Their role is to support NMCP achieve its objective of reducing malaria morbidity and mortality. In addition the Malaria and IMCI units at both WHO and Ministry level collaborate strongly as evidenced from the joint national annual joint review meetings and the presence of Malaria/IMCI coordinators at district level. WHO – Tanzania has supported both technically and financially the following activities:

WHO - Tanzania funding for malaria comes from both the regular budget and extra budgetary sources. The majority of the funding is extra budgetary. To date a total over 500,000 dollars has bee used in the implementation of malaria control activities from WHO. This funding is complementary to funding from other partners. WHO by virtue of its mandate takes on the role of partnership coordination for malaria control and the strengthening of national leadership. However, more effort in this area may be required as to ensure the program is supported fully in partnership coordination.

## *UNICEF*

UNICEF is an original supporter of the TNVS and has played a role in helping to eliminate taxes on retailers who sell bed nets. Its institutional concern is now more focused on equitable and universal access to child interventions; especially in light of early results from a TNVS evaluation in which a number of mothers state that lack of money—even for the highly subsided ITNs—is the main reason that they did not use their voucher.

UNICEF's has one full time professional engaged in malaria activities—with particular emphasis on ITNs.

Recently, UNICEF sponsored a free net distribution campaign in Mtwara and Lindi. Initial results are encouraging. As most agencies and professionals, UNICEF is torn between making sure that anyone who needs an ITN has it and the need to make sure that selling ITNs is a commercially viable activity. Given that even the modest costs of ITN under the YNVS may be too much to afford, UNICEF, it appears, will continue to support distribution of bed nets in areas where it deems it appropriate.

Finally, a recent UNICEF position statement links distribution of free ITNs to other evidence-based interventions, namely measles campaigns, vitamin A and de-worming. UNICEF cites evidence that these interventions have synergistic effects and are more cost effective than doing them separately.

## *JICA*

See Page 18

## *SDC*

See pages 15 - 20

## *Development Cooperation Ireland*

See pages 31 - 35

## *United Kingdom Department for International Development*

See Pages 31 - 35

## *Royal Dutch Embassy*

See pages 31 - 35

## *Italian Cooperation*

The Italian Cooperation provides a full time professional that works in all aspects of the malaria program in the mainland. In Zanzibar, an additional professional

## *Non-Governmental Organizations*

### *Christian Social Services Commission*

The Christian Social Services Commission (CSSC) is an ecumenical body formed in 1991 by the Christian Council of Tanzania (CCT) and the Tanzania Episcopal Conference (TEC). The CSSC represents 15 member Churches (14 Protestant Churches and the Catholic Church and 10 other Church-related organizations. CSSC provides social services in a variety of areas, but its two principal services are health and education. In health, it is estimated that its network of facilities (approx 603) provide about 41 percent of general health services and about 56 percent of rural health services in the country. Its network of facilities includes 83 hospitals, 68 health centers and 452 dispensaries. 20 of the 83 hospitals are "designated" hospitals. Being "designated" means, at least in theory, that the GoT provides 100 percent of the resources needed to run the hospital. The volume of cases of malaria that are seen in at CSSC facilities, and their proximity to the hardest to reach populations in rural areas make CSSC a very important partner in malaria activities in the country.

## *Tanzania NGO Alliance Against Malaria*

**KEY FINDINGS**

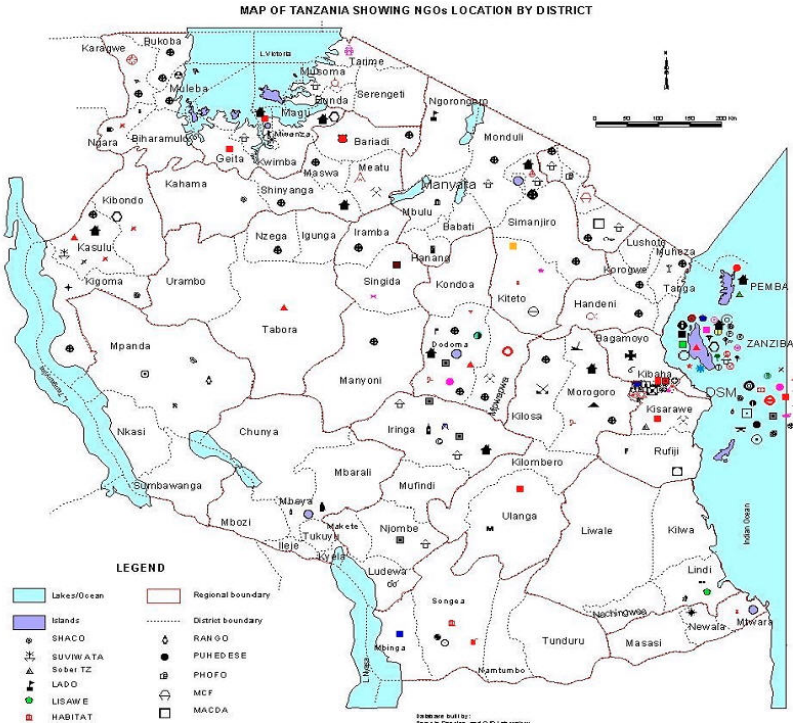
NGOs provide almost 40% of all health services in the country

More than 60% of rural health services are provided by NGOs

There are several organizations that network NGOs like CSSC and TaNAAM

The Tanzania NGO Alliance Against Malaria (TaNAAM) was formed in 2003 with support from USAID via the US-based CORE Group. TaNAAM's function is *to coordinate malaria strategies and initiatives on behalf of NGOs with the GoT and other RBM stakeholders*[47]. Membership is open to all NGOs, Faith-Based Organization (FBOs), Community-Based Organizations (CBOs), research organizations, academic institutions, professional associations and private sector organizations that work in malaria and IMCI. It currently groups about 150 organizations throughout Tanzania. There is some overlap with the CSSC as many FBOs are members of both. A map of TaNAAM membership is in Figure 5. As with CSSC, TaNAAM is an important contributor to fight against malaria in Tanzania.

Figure 5: Map of Tanzania Showing NGOs by District




[47] Program Update: CORE Malaria Secretariats: Kenya, Tanzania, Uganda and Zambia. June 1, 2004.

## *Cross-Cutting*

### *Information, Education and Communication*

Current information, education and communication activities emphasize the use of bed nets (SMARTNETS). The NMCP wishes to extend its IEC activities to encompass other aspects of the program such as prompt treatment of malaria, compliance with recommendations and IPT, among other issues. The NMCP has contracted the Ugandan company, Vantage Communications to design a comprehensive IEC campaign. Officials report that the IEC campaign is 25 percent completed and will be ready in one month. Currently there are no funds to implement the strategy. An educated estimate is that somewhere between USD $3.5 – 4.0 million will be required. There are however, resources to support the TNVS through Round 4 of GFATM for PSI and TaNAAM (mass media and community level promotion).

### *Zonal Training Centers*

The main source of auxiliary health personnel available to the health sector have been the Zonal Training Centers (ZTCs).

The ZTCs are located in "zones" which encompass several regions. The zones do not exist administratively within the GoT, but rather were a creation of the MoH to better organize its training efforts. Some of the ZTCs date back to the 1970s, while others are more recent (1990s) developments. Figure 2 shows the distribution of the six ZTCs currently in existence (Arusha, Iringa, Mwanza, Kigoma, Morogoro and Mtwara). For all intents and purposes only the Primary Health Care Institute in Iringa (PHCI-I) and the Center for Educational Development in Health in Arusha (CEDHA) have achieved maturity as training institutions. Some of the others exist only as "virtual" institutions that organize trainings when needed.

PHCI-I and CEDHA have received resources from USAID (US $600,000) to strengthen their management and operational capacity. A recent review of this investment is generally positive (Simbakalia et al. 2004). However, several areas were noted as needing improvement, among them: trainings by the ZTC did not reach a critical mass of health workers to make significant differences in quality; quantity and quality of trainers needs improvement; financial capacity remains weak; resource centers are inadequate. The same review offered a number of very sensible recommendations.

## Top Cross-Cutting Issues

No resources available for mass media campaign for all aspects of malaria interventions

Extremely poor routine information system for malaria issues

Baseline for some aspects of initiative may be needed

Malaria in schools

Home-based management of fever in children

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Section 6

# Potential areas for President's Malaria Initiative involvement

The broad areas of intervention for the PMI should be in line with current strategies and guidelines of the NMCP. As has been seen in previous sections there are many areas of activity that could be supported by the PMI. In general, the team believes that support should first be given to gaps in already existing interventions (e.g. ACTs). **The PMI strategy in Tanzania should complement what the NMCP is trying to do.** Completely new interventions are a secondary concern and are considered only after priority gaps have been addressed. Interventions to be supported under the PMI strategy are those for which there is a substantial body of evidence of their effectiveness or the preliminary evidence suggests that the interventions may have an impact in Tanzania. The team recognizes that scientific knowledge changes over time and suggests that as evidence shows that a particular intervention is ineffective modifications will need to be made to the PMI strategy suggested in this report. The PMI's strategy for Tanzania addresses immediate, medium and long term issues faced by present NMCP strategies.

In the spirit of the PMI as contained in the White House press release, interventions are recommended that address the needs of high risk populations. Although high risk groups are usually defined by type of population group (e.g. children under five), the **team has added a poverty dimension given that there is evidence that the majority of children under five not benefiting from current interventions are the children of the poorest.** The same applies to women of reproductive age—the poorest are the worst off.

**Related to reaching the poorest of the poor, it should be recognized that the organizations best placed to reach them are NGOs.** Current problems with MoH staffing at the periphery does not bode well for support-intensive interventions by the MoH at that level. The NGOs competitive advantage in reaching the poor is that it is already their mandate and, through a myriad of approaches they have been more or less successful in reaching the hard to reach. The PMI needs to recognize NGOs as full partners and consider providing technical and financial support to them.

**The need for "jump starts[48]" is well recognized by the team and we offer a few ideas for such.** The team understands that high profile activities are an important need for this initiative as it is critical that decision-makers in the U.S.

[48] Defined for this report as those activities that can be accomplished within a relatively short period of time (4-6 months), are high profile and have potential for public health impact.

verify that tax payer money is used intelligently and truly helps those most in need. To make sure that our need for "jump starts" does not negatively affect interventions and activities already being carried out by the NMCP and partners, the team invited ideas and opinions from all key stake holders. Many ideas were put forth, but few survived the scrutiny of the NMCP and its development partners. The short list of ideas presented in this section thus represents considerable amount of discussion and embodies a certain level of consensus among partners.

**A fundamental problem facing the MoH in Tanzania is the issue of human resources.** Several internal human resources reports show that the health sector in Tanzania is facing a critical shortage of health manpower at all levels. If hiring of new personnel is not increased significantly, the country will face a veritable crisis by the year 2015—the year of the Millenium Development Goals (MDGs). GoT is trying hard to resolve the problem introducing reforms and financial support such as strengthening zonal training centers, modifying health worker cadres, etc. However, health work, especially in the periphery, is poorly remunerated, little recognized and careers often lead nowhere. With a myriad of opportunities in the rapidly developing private sector, it is hard for the MoH to recruit and maintain the needed work force. It should be said that if the HR problem is not addressed, the quality and coverage of health services, and consequently of the PMI interventions, will suffer significantly.

Clear guidance was received from USAID-Tanzania's Director as to how to approach the development of the PMI strategy. **Foremost was the need to make sure that PMI should not come to impose or force its own ideas on the MoH and its malaria partners.** This guidance was adhered to strictly and the team made sure that as many governmental officials and partners were contacted and asked their opinion about how PMI could work. This *modus operandi* delighted and re-assured partners that the PMI was here to cooperate and collaborate rather than disrupt or impose.

Related to the need for cooperation, several MoH officials were very concerned that PMI projects and activities be financed and implemented in such a way that gives the national malaria programs a measure of control of their activities. Authorities complain that often partners will finance projects that, if not at the beginning, soon become independent of national control. The NMCP has made it clear that such arrangements would not be welcomed. They cite the current support given to the NMCP through the ITN cell as a good example of how accountability and transparency for the donor can be achieved while giving control of technical operations to national authorities.

Recent data from the DHS and the Census 2002 provide a good geographic distribution of mortality. It is clear that the northern zones (e.g. Arusha) are much better off than counterparts in the South (e.g. Lindi, Mtwara). This pattern of mortality has some relationship to malaria endemicity. **If political issues can be resolved, geographically targeted support should be given to those zones that are having the most difficulty implementing malaria activities and where trends indicate that the Millenium Development Goals will not be achieved.**

**Private – public links should be developed and strengthened as much as possible.** Also, it is critical that public – private partnerships already in existence should not be adversely affected by any PMI intervention. For example, ITNs are currently being sold almost exclusively in the private sector in the mainland through a sustainable and effective link between producers – wholesalers and retailers. Even the TNVS's ITNs are obtained from local retailers. PSI reports that up to 80 percent of retailers have come into the marketplace since the beginning of the IEC campaign for ITNs. This progress should not be underestimated and interventions with ITNs should be evaluated in regard to their impact on private – public sector partnerships.

For the most part, the recommendations presented in this report represent the unanimous opinion of the team members. There were no dissenting opinions on any substantive issues. Obviously, the team's opinion was formed by what they were told and read, as a consequence many readers will recognize their own ideas in the text below. **By no means are the ideas mentioned below the last word in USAID and CDC's PMI strategy, rather they represent a "straw man" with which discussion can start.** They represent interim ideas that can be modified, deleted or added to. In October 2005, a workshop (See below) with the MoH and partners will be held to agree on what type of support USAID and CDC will provide to the NMCP.

Below are some initial suggestions for filling gaps and taking advantage of opportunities that the PMI may wish to consider. Although organized chronologically, Table 9 shows also their relevance in relation to the NMCP management cells.

**Table 9: Summary of Proposed Interventions Under the PMI**

| Cell | "Jump Starts" | Short Term Before Jan 2006 | Medium Term Year 1 | Long Term Year 5 |
|---|---|---|---|---|
| Administrative | | | | |
| Case Management/ IPT | | 1. Support ACT training implementation at district level | 1. Top off ACT procurement for unanticipated 20% increase<br>2. Improved supervision of IPT<br>3. Introduce RDTs | 1. Support ACT procurement if GFATM are not available.<br>2. Subsidize ACT procurement in the private sector<br>4. Stronger links between IMCI and NMCP |
| ITN | 1. LLIN distribution in Zanzibar<br>2. ITNs for special groups | 1. Include ITN in standard home care package | 1. Expansion of TNVS to <5s<br>2. Increase equity of ITNs | 1. Improve private sector manufacturing of LLINs<br>2. Strategies for replacing regular ITNs with LLINs |
| IEC | | 1. Support for ACT roll out | | |
| Monitoring, Evaluation and OR | | | 1. Identify indicators and methodologies for M&E for PMI | 1. Develop and implement OR agenda in support of PMI activities |
| Epidemic Control | | | 1. Epidemiological support to mainland and Zanzibar<br>2. Better mapping of malaria risk | |
| Other | | 1. Identify and hire USAID-CDC team<br>2. October planning workshop | | 1. Urban mosquito control |

## *Gaps and Opportunities 1: "Jump Starts"*

"Jump Starts" were discussed with all interviewees and a number of ideas were mentioned as potential activities. Among these ideas were: exchanges of regular nets for LLINs, mass distribution of LLINs in Zanzibar, using immunizations campaigns to distribute nets, distribution of nets through schools, providing loans to village women who are willing to sell nets, having a political dignitary give the 2 millionth dose of ACT, etc. Some of these ideas have been tried elsewhere. The criteria used for selection were: 1) Activity can be done with high visibility; 2) Activity can be initiated and finished in 3 – 6 months (by December 2005); 3) Potential for public health impact; 4) Does not negatively impact on current malaria control philosophy and strategies; 5) It has the support of the malaria programs in the mainland and Zanzibar. Using these criteria the selected activities were: 1) Mass distribution of free LLINs in Zanzibar; 2) Free LLINs for People Living with AIDS via home care programs.

| "JUMP STARTS" |
| --- |
| Free distribution of LLINs in Zanzibar |
| Include ITN in home care packages for special groups –HIV-AIDS patients |

**The distribution of free LLINs to vulnerable groups--children under five and pregnant women--is a "jump start" that is attractive to Zanzibari authorities.** The ZMCP has experience with media, distribution and community mechanisms to distribute commodities nationwide. If successful, this "jump start" could attain the Abuja target for sleeping under an ITN very rapidly in Zanzibar.

**Patients suffering from AIDS are at special risk from malaria,[49] and should receive the benefits of preventive actions such as the use of LLINs**. Currently, AIDS home care programs do not include a bed net for patients. This "quick win" would have several benefits. First it fills a public health need. Second, it links the PMI with activities PEPFAR is implementing showing collaboration between two USG programs. Third the logistics for this activity are relatively easy and enough LLINs can be found in the market. This activity would also help to main-stream new target populations for malaria programs.

## *Gaps & Opportunities II: Short-term (before Jan 2006)*

**Support for ACT implementation training process, especially at sub-district level.** This activity will address a critical link in making high quality malaria case management available in peripheral health services. Local health councils are hard pressed to find the resources needed to pay for training and as a result often health workers do not receive training that national programs consider important. A rough estimate of the cost per health worker trained is USD $150. Considering that up to 9,200 health workers will need to be trained in the new ACT, it is easy to see that training is a capital-intensive activity and why district councils often do not include it in their work plans. This is particularly difficult for malaria training

[49] Hoffman, Irving F., et al. The effect of Plasmodium falciparum malaria on HIV-1 RNA blood plasma concentration. *Aids: Volume 13(4)* 11 March 1999 pp 487-494

since every time case management changes, in this instance for the shift from SP to ACT, all health workers seeing patients need to be retrained. Although the NMCP hopes to finish the new training by 2006, it is unlikely that such goal can be achieved given the scarcity of resources. The PMI stipulates that "prompt treatment of malaria" is key to the achievement of PMIs goals. It is commonsensical that USAID-CDC be front and center in training activities related to malaria. If adequate resources are made available all health workers can be trained by 2006.

| SHORT TERM |
| --- |
| Support ACT training |
| Include LLINs in PLWHA home care |
| IEC for the roll out of ACTs |
| Identify USAID-CDC Team |
| Strategy development and planning in October |

**Inclusion of LLINs in the standard Persons Living with HIV-AIDS (PLWHA) home care package** will be done as a follow up to the "quick win" activity. Although this intervention is unlikely to result in major gains in mortality it will be the first step in reaching special needs groups that should be targeted by national malaria activities. The use of LLINs, if enough can be found in the local market, would be prudent as persons living with HIV/AIDS will be less likely to re-treat regular nets. As was mentioned before, this activity will link two important USG programs—PMI and PEPFAR.

**IEC/Communications assistance for ACT launch on mainland.** The launch of ACT in Tanzania is a critical milestone in the country's fight against malaria. The shift in treatment regimen means not only that health workers need to be re-trained, but also that the population understands the reasons for the change and what the change means to them in terms compliance with the new treatment. The NMCP has learned from the roll out of SP in 2001, in which stories of bogus SP side effects were spread by the local media and damaged the public image of SP. This time around the NMCP has already commissioned a national communication strategy for ACT. The strategy is almost complete, however resources for it have not yet been secured. NMCP officers estimate that USD $2-3 million will be needed during the first two years of the roll out.

**Identification of local CDC & USAID team.** Key to the success of the intervention will be the personnel who will represent and manage it at the local level. It has been proposed that one professional from CDC and one from USAID-Tanzania co-manage the PMI. Keeping the team small is advisable given the history of large projects in Tanzania and the need to re-assure counterparts that PMI will not get out of hand. It is important that PMI is seen as having a small foot print without large offices or many personnel. PMI should not be located in "difficult to access" venues such as USAID-Tanzania's offices. The professionals will need to be readily available to not only their own institutions but also to GoT and partners at moment's notice.

**Planning workshop.** A two-day workshop will be scheduled in early October ( October 10-11 for mainland and 17 – 18 for Zanzibar) to hammer out details for the PMI strategy. All partners working on malaria will be invited to participate full time. The structure of the workshop will be around the NMCP's own management cells. This will reinforce PMIs commitment to the NMCP and will

help organize discussion around specific subjects. This and other pertinent reports will be shared with participants as a "straw man" with which we will start discussions. It is expected that there will be at least two levels of discussion. First, the programmatic and technical aspects of what the strategy should be and how it should be implemented. This discussion will shape the strategy and help develop detailed implementation work plans. Second, it will also provide a forum for donors to negotiate with USAID-CDC financial support to the different aspects of NMCP activities. Although some agencies will have committed their resources to one or another intervention because of their particular planning cycles, it is expected that PMI will affect the resource envelope available and therefore may bring about modifications in the present or next year's planning.

## *Gaps & Opportunities III: Medium Term- Year One*

**Expansion of the TNVS to children under five years of age.** The current TNVS cover only pregnant women and their infants. However, mortality from malaria is also high in the 1 – 5 years age group. The team recommends that the voucher scheme be extended to cover all children under five years of age. Virtually all partners working with ITNs brought up or supported the idea of the extension. The cost implications will be approximately 11 – 13 million in years two and three of the project. These resources need not come all from USAID – CDC, rather they should be negotiated with other donors during the workshop in October, 2005.

**Increasing equity within the TNVS.** Another aspect of the TNVS that is causing great concern is the inability of low SES families to pay even for the heavily subsidized nets. No-cost nets need to be provided to these families. There are at least two ways of doing this: 1) Distribute free nets to families in need; 2) Introduce a full subsidy to qualifying mothers within the TNVS. In both cases a way to identify those most in need is a precondition—unless nets will be distributed ad hoc to anyone who asks for them. Between the two options, working within the TNVS is better as it recognizes an ongoing NMCP program. Authorities at the village level are, at least in theory, responsible for producing an annual health work plan. As a consequence they often know the neediest families in their community. If lists can be compiled at the village level, targeted distribution of fully-subsidized vouchers may help those in need. The Tanzania Social Action Fund (TaSAF) is working with local government and villages to fund community-level health actions. There are many natural links between raising equity between TNVS and TaSAF that should be explored.

| MEDIUM TERM |
| --- |
| Expand TNVS to include children under five |
| Increase equity in TNVS by supporting fully subsidized ITNs |
| Top off GFATM resources for the purchase of ACTs |
| Improve supervision of all aspects of NMCP with special attention to IPT |
| Improve epidemiological work |
| Strengthen epimdemic forecasting. Detection and response, including IRS in highlands |
| RDTs for the highlands |

**Purchase ACTs to cover treatment shift to public sector after implementation.** The NMCP anticipates a shift in care seeking for fever from the private to the public sector once the effectiveness of ACT is known in communities. This shift has been seen in research carried out in Tanzania and can be as high as 20 percent. When estimates for the procurement of ACT were prepared for the GFATM proposal, the shift in care seeking was not yet known. As a consequence, ACT estimates are low compared to the expected need. Given the rate of training implementation the need to supplement current requests for ACT will not occur until late FY 2006.

**Improved supervision and follow-up training for health workers on IPT.** A critical need for the NMCP is to improve all aspects of its supervision and quality assurance. IPT in particular needs to be singled out as in dire need of supervision improvement.

**Improved epidemiological support to Zanzibar and NMCP.** An emergency need for the Zanzibar and mainland malaria control programs is the need for epidemiologists. Both programs need to process large amounts of epidemiological data. However the programs lack full time staff epidemiologists. The epidemiologists are required to enable programs to produce timely reports, malaria maps and other decision-making instruments.

**Rapid diagnostic tests implementation in highlands.** With the expectation that more accurate results will result in lower treatment costs with ACT, the NMCP wishes to introduce on a limited district-wide basis RDTs. Early evidence in Tanzania shows that RDTs do have the potential for improving the diagnosis of malaria. However, it is not clear if improved diagnosis will indeed result in improved treatment. Support for this activity should include the development of training materials, including improved counseling, to provide health workers with the skills of dealing with patients and caretakers when a fever is not malaria.

## *Gaps & Opportunities IV: Long-term- 5 year strategy*

**Improved private sector manufacturing of LLINs in Tanzania.** LLINs are by far the most desired type of nets to be used. However, as has been seen, current production is not enough to satisfy local needs. A first step that needs to be taken is with the current manufacturer of the LLINs (A to Z). It has been reported that current production is going to UNICEF for international distribution. This is because UNICEF is able to ensure the buying of all production. If such assurances can be made by the NMCP, it is likely that LLIN production will stay in Tanzania. The Acumen Fund, which supported A to Z in

the capacity development for LLINs should be contacted to explore possible support for the other three net manufacturers to establish their capacity to produce LLINs. If necessary, USAID should provide direct support to A to Z to increase their production of LLINs and to the other manufacturers to enable them to start producing LLINs for the local market.

| LONG TERM |
| --- |
| Increase private sector production of LLINs |
| Prepare for supporting ACT procurement when GFTAM funds end |
| Subsidize private sector ACTs |
| Strategy for replacing ITNs with LLINs |
| Urban mosquito control in Dar es Salaam and Zanzibar |
| Stronger links between IMCI and NMCP |
| Improve mapping of malaria risk |
| Operations research |

**Be prepared to support ACT procurement once GFATM funds end.** Current GFATM funds for the procurement of ACT are scheduled to end mid 2007. It is expected that the NMCP will request additional funds from GFATM to continue a reliable supply of ACTs in health facilities. However, it is well known that GFATM is having difficulties in replenishing its funds. This may lead to a shortage of funding for ACT procurement in Tanzania. If the NMCP is not able to meet ACT needs there can be catastrophic consequences as no viable alternative will be available. USAID-CDC and other donors need to be prepared to top off government resources for procuring ACT in mid-2007 and beyond.

**Subsidize private sector sales of ACTs, perhaps on ADDO model.** As is reported, up to 70 percent of cases of fever for which support is sought look for such help in the private sector. With the rolling out of ACT, which is only available at subsidized prices in the public sector, there will be a significant gap of appropriate management of fever. Although the private sector already is selling ACTs, they are very expensive and unreachable to all but the richest in the country. USAID-CDC should consider mechanisms for making ACTs available in the private sector at low cost. One such mechanism can be ADDO model.

**Strategy for replacing ITNs with LLINs.** Every single agency and official who was interviewed reported that LLINs should be the preferred ITN. Because of supply issues this option was deemed difficult to implement. However, recent information from A to Z indicates that LLINs will be made available to Tanzania on a priority basis if the financial resources can be found. A strategy for the replacing of regular ITNs with LLINs should be developed by the malaria control programs in the mainland and Zanzibar (if the "jump start" is not accepted). The moment the strategy can be implemented, USAID-CDC should provide technical, logistical and training support as needed by the malaria control programs.

**Mosquito control in Dar es Salaam and Zanzibar town.** Recent experience with the Dar es Salaam Urban Malaria Project shows that mosquito control with the use of larvicides may be an option in the future for malaria control. Until data becomes available (1-2 years from now), USAID-CDC should consider continued funding (USAID-Tanzania is already providing funding) and if results are encouraging, replication and scale up of the intervention should be considered.

**Stronger links to IMCI.** Although the NMCP and IMCI programs meet regularly, there are still discrepancies in their approaches. For example, the NMCP and IMCI training activities do not appear to be well coordinated. Both programs are embarking on separate training activities that overlap, yet there is no clarity how their respective training content may be modified to avoid duplication. Part of the problem is that the IMCI program does not have sufficient human resources for making the links between IMCI and NMCP more effective. USAID-CDC should consider providing additional human resource support to the IMCI program and providing the technical assistance required to make the link stronger and effective.

**Mapping malaria risk by district, epidemic forecasting and response improved.** The NMCP acknowledges that current malaria mapping and epidemic response capacity is limited. Given that up to 25 percent of the population lives in endemic areas and when malaria epidemics break out case fatality rates are high, USAID-CDC should provide technical, commodity and logistical support to this part of the NMCP. Mapping of malaria risk should receive special attention as many actions are dependent on timely and accurate mapping.

**Operations Research.** The NMCP is embarking into areas that are relatively new (e.g. roll out of ACT, introduction of LLINs) for which not all implementation issues have been resolved. It is reasonable to suggest that support should be provided to the NMCP to develop and implement an operations research agenda that responds to implementation problems. Operations research support should include direct support to agencies such as National Institute for Medical Research and the Ifakara Health Research and Development Centre.

Section 7

# Options for bilateral agreement/MOU with host government

Before USAID-CDC embark on support to the malaria programs in the mainland and Zanzibar clear (and updatable) memorandums of understanding (MOU) should be negotiated. After the GFATM financing, USAID-CDC will be the largest provider of technical and financial resources to malaria activities in the country. This position comes with certain prerogatives and responsibilities that should be made clear up front. The MoU should cover all five years of the project but should be flexible enough so that modification can be made by either party as circumstances change. Among donors we believe that USAID-CDC will be welcomed in a leadership role for malaria activities as long as it continues to coordinate and collaborate in the way in which this report was produced.