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# TANZANIA NATIONAL VOUCHER SCHEME EVALUATION

PUBLIC-PRIVATE PARTNERSHIP TO DISTRIBUTE  
INSECTICIDE-TREATED BED NETS TO  
PREGNANT WOMEN AND INFANTS

**SEPTEMBER 2011**

This publication was produced for review by the United States Agency for International Development. It was prepared by Dayl Donaldson and Michael Thiede, through the Global Health Technical Assistance Project.



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Notwithstanding the contributions of the above individuals, responsibility for the data and analysis presented and conclusions drawn in this evaluation, and for any errors, remain with the authors.



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## ACRONYMS

ACT	Artemisinin-based combination therapy
A to Z	A to Z Textile Mills, Ltd.
BCC	Behavior change communication
CBO	Community-based organization
CDC	Centers for Disease Control and Prevention
CHMT	Council Health Management Team
COMMIT	Communication and Malaria Initiative in Tanzania
DED	District executive director
DFID	Department for International Development (U.K.)
DHMT	District Health Management Team
DMFP	District malaria focal person
DMO	District medical officer
EPI	Expanded Program of Immunization
FBO	Faith-based organization
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GoT	Government of Tanzania
Hati Punguzo	Discount voucher in Swahili
HSSP	Health Sector Strategic Plan
IEC	Information, education, and communication
IHI	Ifakara Health Institute
IPTp	Intermittent presumptive treatment in pregnancy
IRK	Insecticide re-treatment kit
IRS	Indoor residual spraying
ITK/IRK	Insecticide treatment/insecticide re-treatment kit
ITN	Insecticide-treated net
IV	Infant voucher
JHUCCP	Johns Hopkins University Center for Communication Programs
LLIN	Long lasting insecticidal net
MACEPA	Malaria Control and Evaluation Partnership in Africa
MCH	Maternal and child health
M&E	Monitoring and evaluation
MEDA	Mennonite Economic Development Associates
MMTSP	Malaria Medium-term Strategic Plan

MOFEA	Ministry of Finance and Economic Affairs
MoHSW	Ministry of Health and Social Welfare
NATNETS	National Insecticide Treated Nets Strategy
NBS	National Bureau of Statistics
NGO	Non-governmental organization
NMAC	National Malaria Advisory Committee
NMCP	National Malaria Control Programme
PLWHA	People living with HIV/AIDS
PMI	President's Malaria Initiative
PMO-RALG	Prime Minister's Office-Regional Health Authorities and Local Governments
PPP	Public-private partnership
PSI	Population Services International
PWV	Pregnant woman voucher
RBM	Roll Back Malaria partnership
RCC	Rolling continuation channel
RCH	Reproductive and child health
RDT	Rapid diagnostic test
RHMT	Regional Health Management Team
RMFP	Regional malaria focal person
RMO	Regional medical officer
RNE	Royal Netherlands Embassy
RSP	Retailer Stabilization Program
SDC	Swiss Agency for Development Cooperation
SMARTNET	Strategic Social Marketing for Expanding the Commercial Market for Insecticide-treated Nets in Tanzania, ITN social-marketing program, implemented in Tanzania from 2002 to 2007
SMITN	Social Marketing of ITNs, implemented in Tanzania from 2001 to 2007
SMS	Short message service
SOW	Scope of work
SP	Sulfadoxine-pyrimethamine
Swiss TPH	Swiss Tropical and Public Health Institute
TCCP	Tanzania Capacity and Communication Project
TDHS	Tanzania Demographic and Health Survey
THMIS	Tanzania HIV/AIDS and Malaria Indicator Survey
TOR	Terms of reference
TNVS	Tanzania National Voucher Scheme

TNM	Tanzanian net manufacturer
TZS	Tanzanian shilling
UCC	Universal coverage campaign
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
USG	United States Government
U5CC	Under 5 Catch Up Campaign
VEO	Village executive officer
WEO	Ward executive officer
WHO	World Health Organization
WHOPES	World Health Organization Pesticides Evaluation Scheme
WVT	World Vision Tanzania



## EXECUTIVE SUMMARY

Malaria is one of the leading causes of morbidity and mortality in Tanzania. Those at highest risk of severe morbidity and mortality from malaria are children who have not yet developed immunity through prior exposure, and women who, as a consequence of pregnancy, have a transient reduction in their natural immunity. The Government of the United Republic of Tanzania (GoT), through the National Malaria Control Programme (NMCP) in the Ministry of Health and Social Welfare (MoHSW), is committed to implementing all four of the malaria prevention and treatment initiatives endorsed by the Roll Back Malaria Partnership (RBM). Insecticide-treated bed nets (ITNs) are considered among the most effective and affordable of existing malaria prevention approaches.

Provision of ITNs was introduced as part of malaria prevention efforts in Tanzania in 1998. The GoT chose to develop a public-private partnership (PPP) model for ITN distribution, in which households could purchase subsidized nets from private sector retailers. The goal in adopting a PPP approach was to develop, over the longer term, households' awareness of ITNs, appreciation for their health benefits, and willingness to pay for ITNs, thereby supporting financial sustainability. The initial PPP projects, the Social Marketing of ITNs (SMITN, 2000-2001) and Strategic Social Marketing for Expanding the Commercial Market for Insecticide-treated Nets in Tanzania (SMARTNET, 2002-2007), were based on social marketing concepts and approaches. In 2002, the Tanzania National Voucher Scheme (TNVS) was designed to increase ownership of ITNs among vulnerable groups by distributing vouchers to pregnant women during their first antenatal care visit. Women with vouchers could exchange them, along with payment of a top-up amount, to purchase subsidized ITNs at participating retailers. The TNVS rollout commenced in October 2004, with implementation scaled up to all regions of mainland Tanzania by 2004 with financial support from the Global Fund to Fight AIDS, TB and Malaria (GFATM) Round 1 grant. In November 2006, the TNVS introduced a second voucher for infants with grant financing from the President's Malaria Initiative (PMI). Starting in late 2008, two mass catch-up campaigns were implemented, the first aimed to provide ITNs for all under-5 year olds (completed in May 2010), the second to provide an ITN for each sleeping space in Tanzania (2010–2011).

Mennonite Economics Development Associates (MEDA) has been the MoHSW's main contractor and USAID's grantee for implementing the TNVS and the mass campaigns. MEDA subcontracts with ITN retailers and has a subcontract with a net manufacturer to produce and distribute to local retailers long-lasting insecticide nets (LLINs), whereby the manufacturer is paid on the basis of a negotiated amount per voucher that they return to MEDA. Other organizations have contributed to TNVS implementation: Johns Hopkins University Center for Communications Programs (JHUCCP) and Population Services International (PSI) for social mobilization and behavior change communication (BCC); World Vision for training of reproductive and child health (RCH) providers; KPMG for auditing of GFATM funding; and the Ifakara Health Institute (IHI) for monitoring TNVS and mass campaign impact.<sup>1</sup>

From May to July 2011, a team of two expatriate consultants assisted by Tanzanian staff carried out an evaluation of the TNVS. The overall terms of reference for the USAID evaluation team were to "...assess the financial and programmatic performance of the Tanzania National Voucher Scheme (TNVS), especially since revisions of its design, and the U5CC and UCC campaigns, and provide recommendations for its future direction." The USAID-sponsored team

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<sup>1</sup> Other organizations have been involved in the mass campaigns, i.e., World Vision for household registration and the Tanzanian Red Cross to assist households in hanging the campaign LLINs.

employed a variety of qualitative and quantitative methods to gather data for the evaluation. In June 2011, a Swiss Tropical and Public Health Institute (Swiss TPH) sponsored team was in Tanzania to conduct a study to identify keep-up strategy and distribution options to maintain ITN coverage following the end of mass campaigns. Although the goals and field approaches of the two studies were different, the two teams informally shared impressions and findings during the time they were in Tanzania.

The USAID evaluation team's findings and recommendations are presented in this report in four main areas: performance, cost-effectiveness, equity, and sustainability.

**Performance** (or coverage) was defined as the percent of either pregnant woman vouchers (PWVs) or infant vouchers (IVs) that were returned to MEDA, divided by estimated annual births or estimated number of children under 1 year, respectively. The analysis found that in 2011, the TNVS will cover approximately 55% of pregnant women and 40% of infants under 1 year.<sup>2</sup> Analysis of trends in coverage for each voucher showed that performance varies within any region over time and between regions during the same time, but does not necessarily show the same pattern of variation for both vouchers within a given region. Quarterly monitoring data for vouchers returned is usually reported by type of voucher, i.e., PWV or IV. This split analysis obscures the fact that, when the numbers for returned PWVs and IVs are plotted together, it is clear that there is an increase in voucher returns during the rainy season.

The **cost-effectiveness** of the TNVS, or the average cost per voucher returned/net issued, is both a function of MEDA's fixed costs and variable costs associated with LLIN manufacture and distribution. For FY2010, the estimated expenditure per IV and PWV returned was U.S. \$6.83 and U.S. \$7.98, respectively. Estimated average expenditure per voucher increased to U.S. \$9.65 in FY 2011 and is projected to range between U.S. \$6.94 and U.S. \$7.70 in FY2012.<sup>3</sup> While the TNVS may have a higher average cost per net delivered per household compared to mass campaigns, it is superior in terms of targeting highly vulnerable groups, providing nets on a continuous basis, supporting small businesses (retailers), and providing employment at a Tanzanian LLIN manufacturer (especially for females).

The TNVS was determined to largely meet criteria for horizontal **equity**<sup>4</sup> in terms of service delivery and financing, but vertical equity could be improved.

The TNVS is **institutionally sustainable** in that the institutional framework for the TNVS model is established and there is wide knowledge of PWVs and IVs. However, while one of the original objectives in adopting the PPP model was to build willingness to pay all or part of the cost of the ITN, based on increased awareness of the health benefits, there appears to be a limit to the population's willingness to pay, especially among the poorer quintiles; this becomes particularly apparent during periods of free distribution under mass campaigns. Thus, the TNVS

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<sup>2</sup> In contrast, the DHS 2010 estimated that 65% of households had at least one ITN, with the survey conducted after the U5CC and during the UCC.

<sup>3</sup> Assumptions underlying average expenditure per net are presented in Section IV. The increase in the estimate of average cost per voucher returned/net distributed in FY2011 resulted from the increase in GFATM grant funds for MEDA's fixed cost line items (due to TNVS and UCC) and MEDA's lack of a program budget to allocate GFATM and PMI monies among the different programs it manages.

<sup>4</sup> Equity is considered along two axes: i) horizontal vs. vertical and ii) service delivery vs. financing. *Horizontal equity in service delivery* is concerned with whether individuals at the same level of vulnerability benefit to the same degree from a program, whereas *horizontal equity in financing* addresses whether those who receive the same service pay the same amount. *Vertical equity in service delivery* considers whether individuals with different levels of vulnerability receive benefits adequate for their needs, whereas *vertical equity in financing* considers whether financial contributions for services reflect beneficiaries' ability to pay.

is not **financial sustainable** if only household financial resources are considered. Sustainable sources of financing to provide nets to the groups eligible for TNVS nets and nets distributed as part of keep-up strategies remain to be identified.

## RECOMMENDATIONS

### Policy

- Given the TNVS has developed effective institutions for the delivery of LLINs through a PPP mechanism, provides health benefits to sub-sets of vulnerable target groups, and delivers non-health benefits in terms of employment and support to small businesses, NATNETS stakeholders should aim to secure grant financing for continuation of the TNVS for at least the next two to three years.<sup>5</sup>
- TNVS vertical equity could be improved through introduction of different sizes and shapes of nets (equity in service delivery) and introduction of different levels of top-up depending on the size of the net, with the assumption that wealthier households may require larger nets (equity in financing).
- Given THMIS findings regarding households' greater reliance on market sources other than the TNVS for ever-treated ITNs,<sup>6</sup> the development of complementary/alternative strategies for the TNVS should consider the social marketing concepts and approaches that should be developed or re-instituted to promote increased demand for LLINs from all sources post mass campaigns.
- To address the higher health risks from malaria to people living with HIV/AIDS (PLWHA), the NMCP should seriously consider extending eligibility for TNVS vouchers and ITNs to this group. While investment costs are expected to be low, some additional financing may be required for activities such as initial sensitization of this population regarding their eligibility and training for health staff and/or retailers. In addition, while provision of vouchers to PLWHA is not expected to increase TNVS fixed costs, additional financing would be required to cover the subsidy for each additional net provided.

### Management and Implementation

- MEDA's future quarterly and annual reports should report on national, regional, and district coverage<sup>7</sup> levels for each voucher and for both vouchers. Future reports should also provide more in-depth analysis of trends in coverage data – for example, exploring reasons for increases or decreases in coverage at national and sub-national levels.
- Given the increase in the total number of TNVS vouchers returned and ITNs distributed during the rainy season:
  - The impact of limiting the e-voucher to a 60-day period of validity for voucher redemptions should be carefully evaluated during e-voucher piloting.<sup>8</sup> A short validity

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<sup>5</sup> Additional donor financing would need to be identified for introduction of any new keep-up strategy.

<sup>6</sup> The THMIS – carried out in 2007-2008, the last year of SMARTNET and prior to the mass campaigns – found that 51.6% of all surveyed households owned at least one ever-treated ITN and 42.2% of households reported having acquired their net through purchase in the market, whereas only 20.6% reported having acquired their net through *hati punguzo* (TNVS).

<sup>7</sup> MEDA might adopt the coverage measure used in this evaluation in place of the measure currently used, as MEDA's current measure is flawed for certain geographic and time-comparative purposes.

<sup>8</sup> The authors do not question the relevance of the Steering Committee's objectives of encouraging pregnant women to obtain ITNs early in pregnancy or limiting MEDA's financial liability. At the same time, it is important to evaluate during the e-voucher pilot whether households will change the timing of voucher redemption in response to the shorter period of validity.

- period may reduce overall redemptions by households that defer redemption until the start of the rainy season.
- Alternatives should be explored to the current practice of re-stocking LLINs at the retailer level against the number of vouchers collected by retailers, especially for remote communities that may have rainy season stock-outs due to high demand and logistical challenges.
  - TNVS implementing partners should continue to develop and apply approaches to reduce the number and length of TNVS voucher and ITN stock-outs.
    - Reduction of voucher and net stock-outs are among the potential benefits of development and adoption of an e-voucher. The e-voucher pilot should assess impact on voucher/ITN stock-outs.
    - Consideration should be given to introduction of a balanced scorecard<sup>9</sup> or development of performance-based financing incentives to reduce stock-outs of vouchers and ITNs.
  - Given TNVS contribution to building small businesses and employment, especially for women, implementing partners should explore options to further strengthen the business skills and financial sustainability of participating retailers.
  - While future procurements for TNVS nets should aim for a contract with the lowest cost per net including distribution costs, this selection criterion should be balanced with the manufacturer's willingness to include a contract provision guaranteeing a bid price for a specified period, regardless of any increase in the world price of petroleum products.
  - The NMCP and National Insecticide Treated Nets Strategy (NATNETS) should require MEDA to develop a unified system of accounts that permits accounting of budget and expenditures by line item and program effort, possibly to the regional level. MEDA's annual report to NMCP and NATNETS should include information from this budget. Program budgeting will facilitate better understanding of the link between management inputs and output levels and quality, and allow for a more accurate estimate of the future average expenditure per voucher returned/net distributed.

## Evaluations/Studies

- NATNETS stakeholders should provide technical and financial support for a multivariate statistical analysis of existing survey, TNVS, and net-related BCC data to develop and test hypotheses on the individual and joint significance of demand and supply-side variables on measures of TNVS coverage by region and over time. Analysis results would improve the evidence base for selecting among TNVS adaptations to increase voucher returns in regions with low coverage, and help determine the groups to be reached and complementary approaches that may need to be developed.
- In light of the evaluation's finding of the considerable variability in TNVS regional coverage, NMCP and NATNETS stakeholders should provide MEDA with technical assistance and financing for a thorough assessment of the impact of reducing the number of regional supervisors on TNVS performance.
- To more accurately assess the on-going contribution of the TNVS to ITN ownership in Tanzania, all future TDHS, THMIS, and other surveys with questions on malaria or bed nets should include a question regarding the sources from which households have acquired their bed nets.

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<sup>9</sup> The balanced scorecard is designed based on a detailed understanding of the linkages between type and levels of inputs (human and physical), processes, and achievement of a program's objectives (i.e., outcomes). It usually includes both financial and non-financial measures and highlights comparison with pre-determined target values [http://en.wikipedia.org/wiki/Balanced\\_scorecard](http://en.wikipedia.org/wiki/Balanced_scorecard), accessed on 08/18/2011.

- To improve the evidence base for future decision-making regarding BCC support for TNVS objectives, NATNET stakeholders should provide technical and financial support for a meta-review of monitoring and evaluation reports and evaluations/research regarding the impacts and levels of financing for malaria-related BCC efforts, especially related to ITNs, in Tanzania and elsewhere in sub-Saharan Africa. NMCP may wish to explore initiatives that could complement the TNVS (to reach under-served groups within target populations) or provide an alternative to the TNVS (if more cost-effective or as keep-up strategies). At NMCP's request, NATNETS stakeholders should be ready to provide technical and financial assistance to support a review of existing literature for evidence on alternative ITN distribution approaches in African countries,<sup>10</sup> site visits to select countries to review alternatives, or pilot test alternatives.
- NMCP and NATNETS efforts to develop longer-term sustainable strategies for future procurement and distribution of LLINs to at least 80% of the population should include: i) estimate of the types and amounts of additional managerial and financial support the GoT may be able to provide; ii) likely types and levels of donor support;<sup>11</sup> and iii) exploration of the potential to obtain significant levels of material/financial support from non-traditional sources.<sup>12</sup>

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<sup>10</sup> For example, Tanzania might consider co-distribution of ITN vouchers and/or nets during existing health campaigns (e.g., measles vaccination or vitamin A).

<sup>11</sup> Future staffing of the ITN Cell in the NMCP through the STPHI should ensure continuation of the essential function of estimating, soliciting, and tracking cash flows from donor funding for the TNVS and mass campaigns.

<sup>12</sup> One non-conventional option may be via corporate social responsibility. For example, Merck made substantial and long-term commitments to provide Mectizan to eliminate river blindness in West Africa.



# I. INTRODUCTION

## TERMS OF REFERENCE

### Purpose of Evaluation

The overall terms of reference for the evaluation team were to “...assess the financial and programmatic performance of the Tanzania National Voucher Scheme (TNVS), especially since revisions of its design, and the Under-5 Catch-up Campaign (U5CC) and Universal Coverage Campaign (UCC), and provide recommendations for its future direction.”

### Key “High Level” Questions

The scope of work (SOW) for the TNVS Evaluation (USAID/Tanzania, April 13, 2011) included the following high-level questions:

- Is the TNVS a cost-effective mechanism for net distribution to the targeted vulnerable groups?
- Based on the demand for long-lasting insecticide treated nets (LLINs) through the TNVS post-U5CC and UCC campaigns:
  - What proportion of the targeted vulnerable groups might the TNVS cover in the future?
  - To what extent could the TNVS mechanism contribute to maintaining high LLIN coverage in mainland Tanzania for the next three to five years?
- Are there specific management, operational, or implementation changes that would improve the performance of, demand for, and cost-effectiveness of the TNVS?
- Are the assumptions that guided establishment of the TNVS in 2004 still viable, given the change of the insecticide-treated nets (ITN) strategy from a targeted, public-private partnership to universal free net distribution to all age groups?
- Are there other potential alternatives for replacement of nets following the two free mass net distributions in mainland Tanzania?

## EVALUATION PROCESS/METHODOLOGY

### Preparations

#### Pre-Arrival

Prior to the team’s arrival in-country, GH Tech staff in Washington, D.C., circulated an email to share the team’s SOW with stakeholders in Dar es Salaam and indicate the team would contact them to set up interview appointments. USAID provided a large number of documents related to the TNVS that GH Tech staff placed on a Project Spaces website for pre-arrival review by team members.

#### USAID Consultation

Upon arrival in Tanzania, the team met with USAID’s Office of Health staff for initial introductions and to review the SOW. USAID indicated the evaluation’s findings, particularly estimates of the cost-effectiveness of the TNVS, especially post UCC, would serve as an input to U.S. Government decision-making regarding future programming of USAID/PMI funds for LLINs as part of its support for malaria control in Tanzania. The team maintained contact with USAID/Tanzania during the time it was in Tanzania.

## **Team Planning Meeting**

After meeting with USAID, team members conducted a team planning meeting the following weekend to develop a methodology for the evaluation, including the drafting of semi-structured interview questionnaires,<sup>13</sup> and review and revision of a calendar/work plan. These were summarized in an Inception Report to USAID/Tanzania.

## **Data Gathering and Analysis**

To be responsive to the specific questions raised in the SOW, the team used both quantitative and qualitative data sources and research methods. Quantitative analyses were based on the team's identification of indicators to serve as measures of TNVS programmatic performance, financial costs, cost-effectiveness, equity, and sustainability. Details on the quantitative indicators selected, how they were measured for purposes of the evaluation, and data sources are provided in Section IV. Qualitative data sources and methods used include the following:

### **Document Collection and Review**

USAID provided the team, through GH Tech, a large number of documents relevant to evaluation of the TNVS. In addition, GH Tech and team members identified other documents and papers relevant to the evaluation. In Tanzania, documents and data were provided to the team by USAID, MEDA, and the team leader advising the ITN Cell of the NMCP. Annex A contains the scope of work for the assignment. Annex B lists persons contacted by the team; Annex C provides a list of documents consulted.

### **National-level Interviews**

Interviews were conducted with representatives of: i) the Ministry of Health and Social Welfare (MoHSW); ii) other donors supporting malaria control; iii) representatives of MEDA and other non-governmental organizations (NGOs) implementing the TNVS, U5CC, or UCC, or supporting malaria control efforts; iv) academic and research institutions; and v) private sector firms involved in the production or sale of ITNs/LLINs. Follow-up interviews were scheduled as needed to collect additional data and clarify existing information.

### **Field Visits—Tanga and Kagera Regions**

As the time in-country did not permit for sampling TNVS experience by regions, districts, or individuals, the team aimed to conduct field visits in regions with different characteristics and tried to determine patterns in interviews and observations by region. The team made field visits to Tanga (June 13 to 16)<sup>14</sup> and Kagera (June 19 to 23) and also visited A to Z Textile Mills Limited (A to Z) in Arusha (June 23). Tanga was selected for several reasons. First, it is an area of moderate malaria prevalence. Second, it was the first region completed under the U5CC but distribution of LLINs through the UCC program had not yet been conducted.<sup>15</sup> Third, it is the area where distribution of U5CC nets as part of the annual measles campaign was piloted. Kagera was selected for the following reasons: first, it is an area of high malaria prevalence; second, distribution of LLINs through the UCC was recently concluded in the area; and third, periodic indoor-residual spraying (IRS) is conducted as well as LLIN distribution. In addition, Dr. Alex Mwita, the regional medical officer in Kagera, was available to share his experiences with

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<sup>13</sup> Semi-structured questionnaire guides were drafted for interviews with the National Malaria Control Program (NMCP), the Mennonite Economic Development Associates (MEDA) and the Global Fund for AIDS, TB and Malaria (GFATM). The questions focused on national level policies; implementation structures and experience for the TNVS, U5CC, and UCC; new policy and program developments; and overall impressions of TNVS strengths and weaknesses in the past and for the future.

<sup>14</sup> MEDA's staff provided guide and translation assistance as well as transportation for the Tanga field visit.

<sup>15</sup> The thought was that the gap between the U5CC in Tanga and lack of UCC might provide insights on TNVS effectiveness as a stand-alone mechanism for distributing subsidized nets.

TNVS design and implementation challenges as he had formerly served as NMCP Program Manager. Two districts were visited in each region and efforts made to visit health facilities far from the main road to better understand the impact of logistical difficulties on TNVS vouchers and bed net distribution.

The team interviewed representatives of two to three net manufacturers (including a tour of the A to Z Textile Limited factory in Arusha) and owners/sales personnel at retail shops that provide ITNs/LLINs in exchange for vouchers. In the public health sector, the team met with the regional medical officer (RMO) and regional malaria focal person (RMFP) to obtain their views on the current TNVS and potential issues for future implementation and confirm the selection of districts to be visited. At regional hospitals, team members were escorted to maternity and pediatric wards by regional or hospital staff. In Kagera, the matron introduced the team to mothers on the wards visited, indicating the purpose of the team's visit and assuring patients that participation was voluntary and confidential. At the district level, the team met with the district medical officer (DMO) and district malaria focal person (DMFP), and visited health facilities to interview clinical personnel (especially the maternal and child health (MCH) and environmental health officers) and clients attending reproductive and child health (RCH) clinics.

At the community level, the team sought to speak with members of households present at the time of the visit regarding their own experiences with the acquisition and use of ITNs/LLINs, either through the TNVS, mass "catch-up" campaigns, or purchase in the commercial market. Some of those interviewed were asked about their perceptions of community attitudes toward and willingness/ability to pay for preventive ITNs/LLINs. Team members observed that ITNs were used in many households, especially where the UCC had been conducted.

### **Keep-up Strategy Consultative Meetings**

During late May and June, the Swiss TPH sponsored a consultant team in conducting zonal consultative meetings with stakeholders to explore their views on options for a post-UCC campaign bed net "keep-up" strategy for Tanzania and model the potential financial requirements associated with each strategy.<sup>16</sup> TNVS evaluation team members were invited to attend, as observers, the Keep-Up Strategy consultative meetings in Dar es Salaam on June 7 and in Mwanza on June 17. Following the meeting in Mwanza, members of the USAID and Swiss TPH teams met to share observations from their field.

### **Presentations**

The team presented preliminary evaluation findings and recommendations to USAID/Tanzania and PMI staff on July 1. Based on USAID comments, it was revised and presented to NMCP, MEDA, and other NGO implementers on July 5. The team leader for the ITN Cell of the NMCP facilitated circulation of the July 5 presentation slides and notes to all NATNETS members.

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<sup>16</sup> The major difference in the SOW/TOR for the two teams was the focus on the TNVS recent performance and potential as a keep-up strategy in the short run (USAID) vs. consideration of multiple options for bed net keep-up in the short, medium, and longer term (STPHI). Another difference was the field work approach, with the USAID team conducting more in-depth field visits in two regions and the STPHI team conducting large stakeholder consultations in all zones.

## **Report Drafts and Finalization**

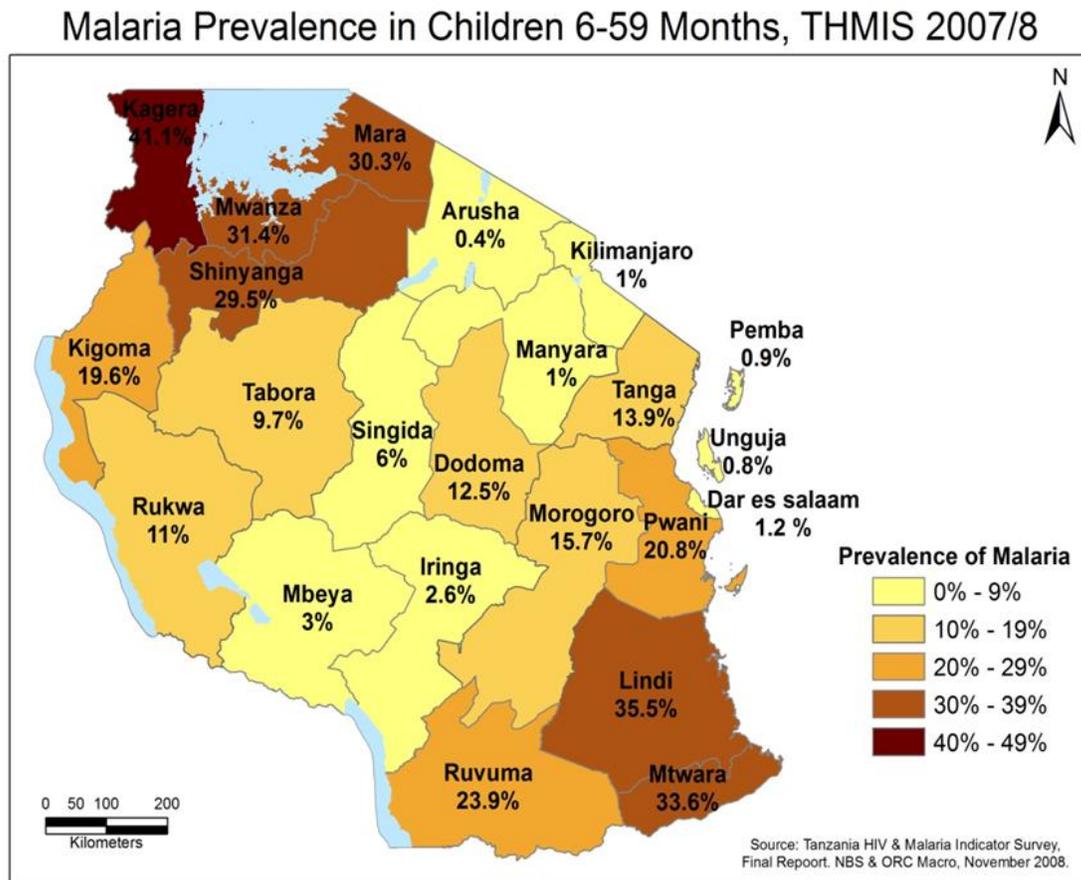
The first draft report was completed on July 12. This first draft was reviewed by USAID/Tanzania and PMI staff and their comments were used as the basis for preparation of a second draft. In August 2011, the second draft report was submitted to USAID/Tanzania, which reviewed it internally and circulated it to non-USAID stakeholders for review and comments. Consolidated comments from this wider review were used as the basis for completion of the third draft to the final report.

## II. BACKGROUND INFORMATION

### MALARIA IN TANZANIA

Eighty percent of Tanzania's population of about 41 million is estimated to live in areas with stable perennial to stable seasonal transmission of malaria (NMCP, February 2008), with malaria prevalence varying by region (see Figure 1). *Plasmodium falciparum* (*P. falciparum*), the most common malaria parasite in Tanzania, causes severe malaria that may be fatal if not quickly recognized and cases properly treated. Thus malaria is one of the leading causes of morbidity and mortality in Tanzania, with the groups at highest risk being children who have not yet developed immunity through prior exposure to the malaria parasite and women who as a consequence of pregnancy have transient reduction in their natural acquired immunity to malaria.<sup>17</sup> Malaria accounts for about 40% of outpatient attendance (MoHSW, 2006) and is associated with individual, household, social, and economic losses due to interruption of the activities of daily life (TDHS, 2010).

Figure 1. Malaria Prevalence in Children 6-59 Months in Tanzania



Source: THMIS 2007-2008

<sup>17</sup> While pregnant women and infants are at greater risk of morbidity and mortality from malaria, vulnerability varies according to the risk of exposure to the *Anopheles* mosquitoes that carry malaria. Exposure risk is lower in areas with specific characteristics (e.g., higher altitude) or with malaria prevention efforts such as IRS.

## National Malaria Control Programme

The Government of Tanzania (GoT), through MoHSW's NMCP, is committed to implementing malaria control strategies recommended by the Roll Back Malaria (RBM) Partnership. These include prevention through ITN promotion and distribution; intermittent preventive treatment (IPTp) for pregnant women; and IRS, and improved diagnosis and treatment through rapid diagnostic tests (RDTs) and artemisinin-based combination therapy (ACT). The goals and strategies for these initiatives are outlined in the *National Malaria Medium-term Strategic Plan, 2008-2013* (MMTSP) (NMCP, February 2008).

The NMCP has also developed a *Communication Strategy for Malaria Control Interventions, 2008-2013* (NMCP, no date). Communication initiatives related to promotion of malaria prevention and treatment behaviors in Tanzania use a slogan and a common logo. The communication efforts have or will include: public service announcements; television and radio messaging; billboards; promotions at community-level cultural and sporting events; and mobile video road shows. Another initiative works with journalists and other partners in the media, entertainment industry, government, and private sector to use media and entertainment to create a culture of net usage, fever testing, and appropriate treatment.<sup>18</sup>

## INSECTICIDE-TREATED NET COVERAGE AND USE TRENDS

Insecticide-treated bed nets are one of the most effective,<sup>19</sup> affordable malaria prevention approaches in existence. Tanzanian households have multiple channels through which they can acquire a bed net of any type (referred to as “any bed net”) or an insecticide-treated bed net (ITN). The major channels include: purchase of nets at market prices from retailers/mobile vendors; purchase of subsidized nets with redemption of a TNVS voucher (see sections III and IV of this report); donations of free nets, (e.g., from a mass campaign, see Section V and Bonner, et al., 2011); or from an employer or a charity. While clearly a function of ownership, bed net use also reflects attitudes on the health benefits of sleeping under a net.

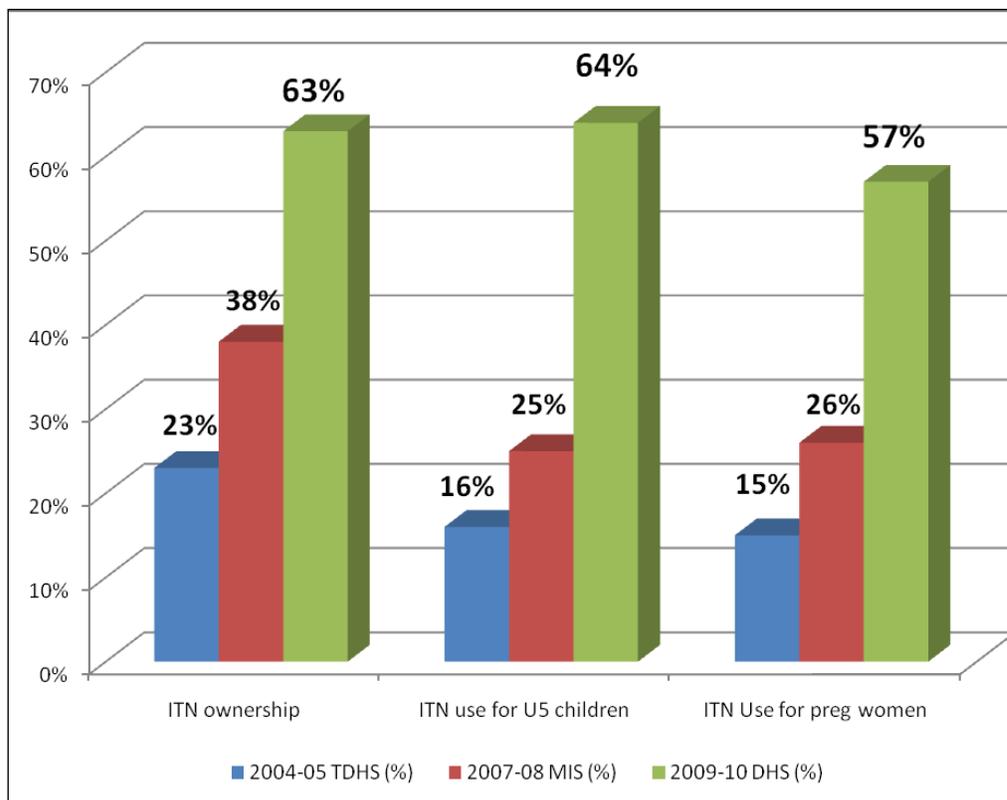
*National-level trends.* Household ownership of at least one ITN increased from 23 to 63% between 2004-2005 and 2010. The percent of children under 5 that slept under an ITN the night before being surveyed increased from 16 to 64%; the percent of pregnant woman that slept under an ITN increased from 15 to 57% between 2004-2005 and 2010 (TDHS, 2004-2005 and 2010) (see Figure 2). These aggregate trends show significant improvement in bed net ownership and use, with much of the improvement measured after the mass bed net distribution campaign targeting children under 5.

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<sup>18</sup> <http://www.comminit.com/africa/content/communication-and-malaria-initiative-tanzania-commit>, accessed on 10/15/11.

<sup>19</sup> Lengeler (2004) estimates ITN use reduces clinical episodes of malaria by 50% and severe malaria cases by 45%.

**Figure 2. Trends in ITN Ownership and Use, Tanzania, 2004/5, 2007/8, and 2010**



Source: Jessica Kafuko, *Continuous ITN Distribution: Tanzania Mainland Keep-Up Strategy*, Presentation at the PMI Retreat, May 2-6, 2011.

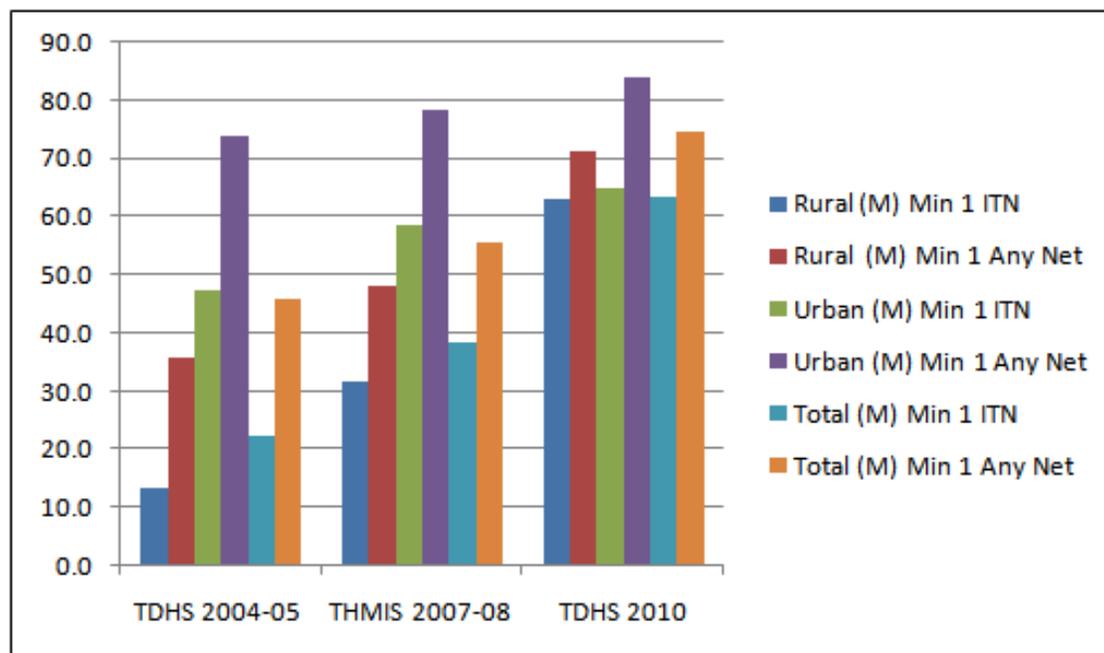
## Disparities in Net Ownership and Use

### Rural vs. Urban and Wealth Quintile

Overall, measures of ITN net ownership improved in the aggregate between 2004-2005 and 2010; moreover, disparities between rural vs. urban areas and between wealth quintiles were significantly reduced.<sup>20</sup> The reduction in disparities occurred largely between 2007-2008 and 2010, and was generally more pronounced for ITNs than for any other type of bed net. For example, disparities in rural vs. urban household ownership of a minimum of one ITN or at least one of any bed net trended toward convergence in mainland Tanzania between 2004-2005 and 2010. Rural household ownership of at least one ITN net increased from 14 to 63%, and ownership of any bed net rose from 36 to 71% between 2004-2005 and 2010. Urban household ownership of at least one ITN increased from 48 to 65%, and ownership of any bed net increased from 74 to 84% during the period (see Figure 3). Likewise disparities in ownership of at least one ITN or any one bed net declined between wealth quintiles.

<sup>20</sup> Rural vs. urban residence and income quintiles are correlated with each other and with underlying factors such as educational attainment of household heads. This correlation confounds interpretation of trends based only on a single variable. For example, rural vs. urban differences may reflect household responses to monetary costs of nets as well as time and travel costs. Statistical research is required to correctly measure the relative importance of all determinants of household ITN and any bed net ownership and use to provide a stronger foundation for decision-making regarding the TNVS, especially in the case of keep-up strategies.

**Figure 3. Households (%) w/Minimum of One ITN and/or Any Bed Net, Rural vs. Urban, Tanzania (Mainland)**



Source: data from TDHS 2004-05, THMIS 2007-08 and TDHS 2010.

With net ownership a prerequisite for net use, disparities in net use by pregnant women and by children under 5 also declined between 2004-2005 and 2010, especially with respect to ITNs between 2007-2008 and 2010.<sup>21</sup> However, progress in the reduction of disparities in net ownership, average number of nets, and net use may not be maintained if this progress resulted primarily from ITN distribution during the U5CC.<sup>22</sup> Once the UCC is completed, it will be important to monitor through survey research the degree to which increased equality in bed net ownership and use is maintained.

### Regional Disparities in Net Ownership

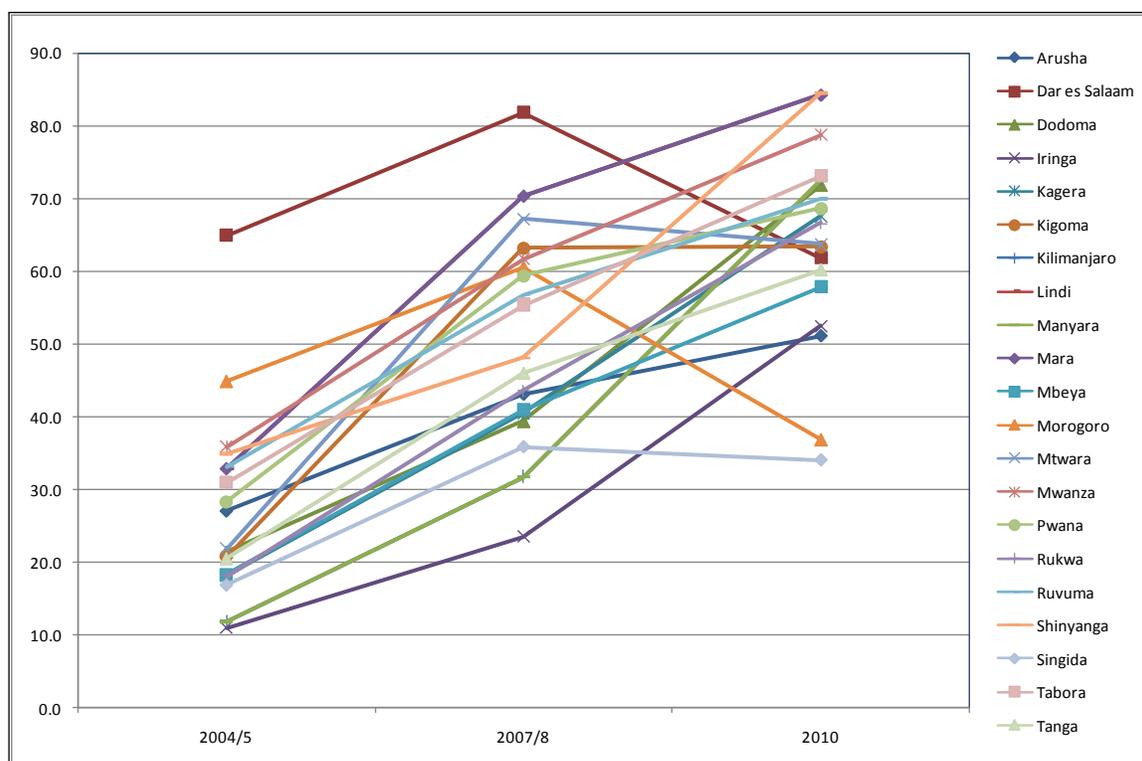
While national level and rural vs. urban and wealth quintile trends in coverage and use measures clearly show improvement in ITN ownership and use, these aggregate measures obscure regional disparities in ITN ownership and use. ITN ownership increased in most regions between 2004-2005 and 2007-2008.<sup>23</sup> For example, between 2007-2008 and 2010, ownership of at least one ITN sharply declined in Dar es Salaam and Morogoro, as compared to either stagnating (or slightly decreased) net ownership in Kagera, Kigoma, and Singida. During the same period, the remaining regions show slow, regular, or more rapid increases in coverage (see Figure 4).

<sup>21</sup> Detailed information and analysis regarding trends in households' net ownership, the average number of nets per household, and the use of bed nets by pregnant women and children under 5 by rural vs. urban areas and between income quintiles appear in Annex D.

<sup>22</sup> Marchant et al. (February 2009) found that while the proportion of nets owned by households in any income quintile increased between 2006 and 2008, disparities in net ownership and use were not necessarily reduced. This may reflect the fact that, according to that survey, only 13% of households acquired their bed nets through *hati punguzo* (and thus unable to influence trends largely affected by sale of bed nets at market prices) or a variable top-up was paid in addition to a voucher to obtain a TNVS net increased during the period.

<sup>23</sup> TNVS net coverage levels for targeted groups also display regional diversity (see Section IV).

**Figure 4. Trends in ITN Ownership by Region, Tanzania, 2004/5, 2007/8 and 2010**



Source: Authors' compilation of data from the DHS, 2004/5; THMIS 2007/8; and DHS 2010.

The observed variations within and between regions in net ownership (i.e., intra-regional vs. inter-regional variations) are likely influenced by the following factors:

- Demographic and socio-economic characteristics of households
- Level of bed net-related BCC messaging and its appropriateness to local populations and conditions
- Availability and attributes of health services that influence households' demand for ITNs
- Geographic and seasonality factors that influence households' monetary and time costs associated with accessing ITNs and the provision of nets within specific areas
- Design and implementation of programs such as SMARTNET, TNVS, U5CC, and UCC over time
- Implementation of complementary malaria control efforts, e.g., indoor residual spraying

Quantitative research using survey and program data is required to disentangle the size and significance of such factors and the relationship to variations in regional ITN coverage and use. Such analysis would be particularly useful in determining the relative contributions of various programmatic efforts in achieving universal ITN coverage.



### III. TNVS—DESIGN AND IMPLEMENTATION ARRANGEMENTS

#### EVOLUTION OF DESIGN

##### SMITN/SMARTNET— 2000 to 2007

In 1998, insecticide-treated nets were introduced to Tanzania as part of malaria prevention efforts under DfID financing for malaria control. The social marketing of ITNs began in 2000 through a project called Social Marketing of ITN (SMITN), implemented by Population Services International (PSI) and co-financed by DfID and the Royal Netherlands Embassy (RNE). The SMARTNET project started in 2002 as a continuation of SMITN with the objective of reducing infant and under-5 mortality rates by increasing the commercial availability of ITNs and establishing a nationwide culture of ITN use. Through SMARTNET, insecticide re-treatment kits (IRKs), known in Tanzania as *ngao*, were made available to Tanzanian net manufacturers free of charge for bundling with new ITNs. IRKs were also distributed to health facilities. Under SMITN/SMARTNET, sales of ITNs increased from 1.25 million in 2001 to 2.6 million in 2005. Units of *ngao*, both those bundled with nets as well as those sold alone, increased from 0.5 million in 2001 to 5.8 million in 2005.<sup>24</sup> A review of the SMARTNET program concluded that "... advertising and promotion was done successfully ... (but now there is a) need for tailor made innovative marketing techniques ... from mass marketing to a change agent approach."<sup>25</sup> Financial support for SMARTNET ended in 2007.

##### TNVS—2004 to 2009

In 2004, the Tanzanian National Voucher Scheme was launched. The scheme allowed selected highly vulnerable groups to obtain vouchers from public, private, and faith-based health facilities that could be redeemed for ITNs at a highly discounted price from retailers accredited by MEDA. Pregnant women were eligible to obtain a TNVS pregnant woman's voucher (PWV) during their first antenatal care (ANC) visit.<sup>26</sup> In November 2006, infants were added as a target vulnerable group with the infant voucher (IV). Initially, the IV was provided to mothers only at the time they brought their infant to a health facility for measles vaccination (at around 9 months of age). Since the end of 2009, the TNVS has provided an IV to mothers during every visit to a health facility for any childhood vaccination. By March 2007 the IV had been rolled out to 15 regions and reached national coverage in March 2008. Together, the TNVS is popularly known as *hati punguzo* (Swahili for "discount voucher").

Mothers/households could redeem a TNVS voucher in exchange for a polyester net bundled with an ITK. By late 2009, LLINs had replaced nets bundled with IRKs in all donor-supported net distribution programs, including the TNVS. In addition to providing the voucher to the retailer, mothers/households must pay an additional amount, i.e. the "top-up." The two main objectives of the top-up are to provide a financial incentive to the retailers to participate in the TNVS and develop a sense by households that redeem TNVS vouchers that nets have a monetary value.<sup>27</sup> Initially the amount of the top-up varied depending on the difference between the voucher's fixed value and the cost of the net to the retailer plus a profit. Between 2005 and

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<sup>24</sup> Koot, J., et al., November 2006.

<sup>25</sup> Ibid.

<sup>26</sup> While the main TNVS objective is to provide ITNs to vulnerable groups, the voucher is also seen as an incentive for pregnant women to seek antenatal care services (Christian Lengeler, personal communication, May 31, 2011).

<sup>27</sup> Nick Brown, personal communication, May 31, 2011.

2008, the average top-up increased from TZS 968 to over TZS 2,500 for the PWV and to TZS 3,250 for the IV.<sup>28</sup> During this time multiple manufacturers produced ITNs bundled with IRKs to wholesalers who, in turn, supplied TNVS accredited retailers.

### TNVS—2009 to Present

During the second half of 2009, the TNVS introduced an upgraded voucher which could be exchanged for a LLIN (rather than the conventional polyester net with bundled IRKs). While the LLINs are more expensive to produce than the earlier polyester nets bundled with the ITNs, the top-up was reduced and fixed at TZS 500 (U.S. \$0.35).<sup>29</sup> This change was motivated by the Steering Committee’s wish to reduce a documented inequity in access to and use of voucher nets, and increase demand for TNVS nets through a reduction in their price to mothers and households.<sup>30</sup> Following adoption of the “upgraded voucher” in October 2009, the number of PWVs and IVs returned have increased (see Table I).

**Table I. Average Top-Up Amounts and TNVS Voucher Subsidies, 2005–2010**

		2005/6	2006/7	2007/8	2008/9	2009/10*	2010/11*
Both	# Vouchers Returned	816,868	1,129,259	1,295,485	1,117,941	1,212,439	~1,486,312
PWV	# Vouchers Returned i	816,868	1,129,259	854,324	653,468	637,857	~748,280
	Average Top-up ii	968	1,149	1,601	2,319	500	500
	Voucher Subsidy ii, iii	2,750	2,750	3,250	3,250	~8,370	~8,370
IV	# Vouchers Returned i	n/a	n/a	441,161	464,473	574,582	~638,032
	Average Top-Up ii	n/a	n/a	3,250	3,250	500	500
	Voucher Subsidy ii, iii	n/a	n/a	3,250	3,250	~8,370	~8,370

Note: \* Voucher subsidy in TZS calculated based on U.S. \$6.20/net adjusted with an exchange rate of TZS 1,350 per U.S. \$. Sources: MEDA’s M&E statistics; Brown, N. “TNVS Voucher Redemptions and Costs” (based on IHI survey data); Mugashe, D., personal communication regarding voucher subsidy, June 30, 2011.

<sup>28</sup> Between 2005 and 2008, domestic inflation and increased oil prices helped increase costs for the TNVS net. Since the voucher’s value remained constant, the increased cost resulted in a higher top-up paid by households.

<sup>29</sup> To reduce fraud, the fixed top-up amount of TZS 500 is printed on LLIN external packaging. To reduce leakage to non-target populations, retailers are told to distribute the TNVS nets only against the voucher and payment of the top-up. Information about other LLINs for sale at full cost in the market was unavailable to the team.

<sup>30</sup> MEDA reported challenges introducing the upgraded voucher. It had to replace old vouchers with new. Further, the increased demand for TNVS LLINs with its lower top-up made it difficult to maintain sufficient retail stock.

A to Z Textile Mills Limited in Arusha was contracted as the sole manufacturer to provide LLINs for the TNVS and mass campaigns.<sup>31</sup> Its contract price per LLIN includes the cost of direct distribution of LLINs to retailers, without wholesaler intermediaries. TNVS retailers collect and exchange vouchers for new stocks of ITNs distributed by A to Z representatives. A to Z was selected via international tendering, as it offered the lowest cost for a product licensed for use in Tanzania and met LLIN-quality requirements.

Aside from introduction of the upgraded voucher, the TNVS has continued to expand health facility and retailer networks. As of September 2010, TNVS vouchers have been available to mothers through a network of 4,428 RCH clinics (91% of total RCH clinics in Tanzania). Out of the participating clinics, 3,820 (86%) are government owned and operated, 434 (10%) are operated by faith-based organizations (FBOs) (88% of all FBO-run RCH clinics), and 174 (4%) are owned and operated by the private sector (58% of all private-sector RCH clinics) (MEDA Quarterly Report 27, AMCC 6, January–March 2011).

As of March 2011, A to Z reported it had signed contracts with 5,406 retailers, 5,232 of which were verified by MEDA.<sup>32</sup> Prior to 2010, retailers participating in the TNVS were required to provide all initial working capital for purchasing TNVS nets. To generate larger stocks of nets at the retail level and reduce the number of net stock-outs, the Retailer Stabilization Program (RSP) was introduced during the first quarter of CY2010. Under the RSP, any TNVS retailer who purchases five TNVS nets is eligible to receive a one-time additional five free nets from the net manufacturer and an additional five free nets paid for by USAID/PMI. By March 2011, 3,562 retailers had signed seed capital agreements with A to Z to participate in the RSP, of which MEDA has verified 3,490 agreements.

## **VOUCHER/NET CYCLE**

There are several steps in the life cycle of a voucher on its way to distribution for a net and ultimate redemption by the net manufacturer for payment. The voucher/net cycle from mid-2009 to the present<sup>33</sup> is presented in Figure 5.

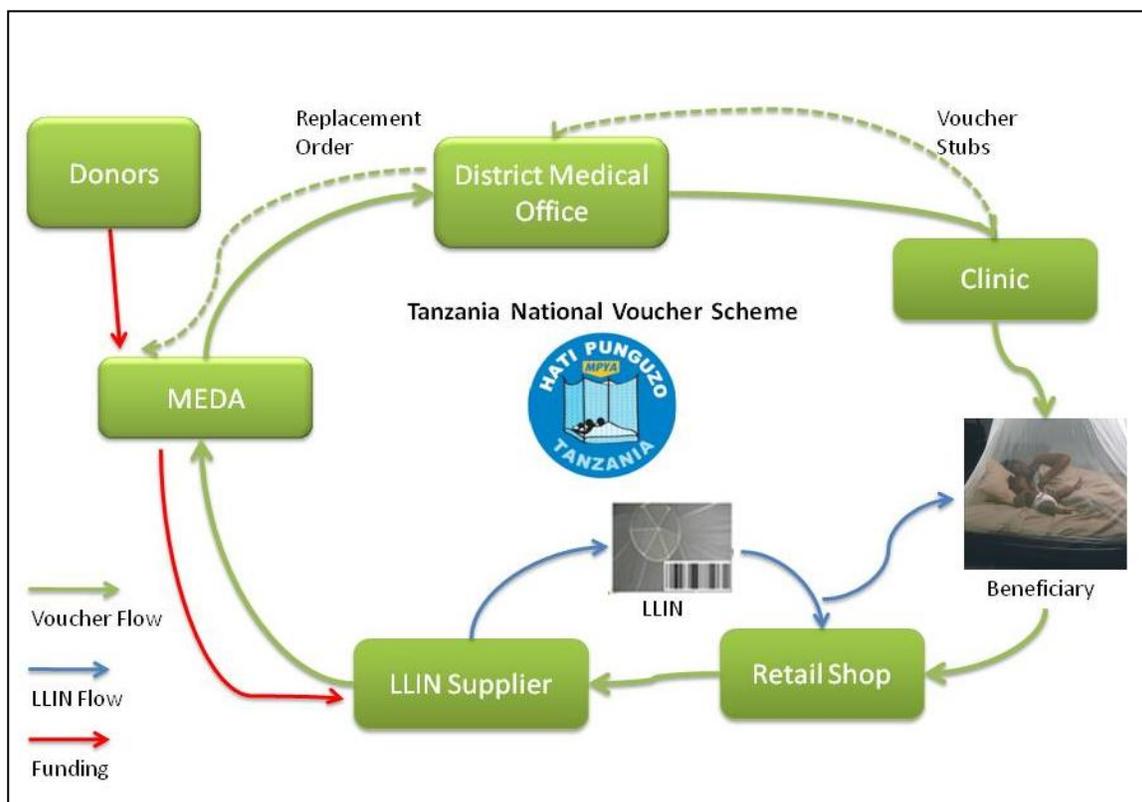
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<sup>31</sup> One other LLIN manufacturer has recently obtained registration to permit the sale of LLINs in Tanzania. A to Z was also the manufacturer of the LLINs distributed in Tanzania during the U5CC and UCC.

<sup>32</sup> A to Z reports it has recruited an additional 4,844 retailers (MEDA, January-March 2011), but these have not been registered by MEDA. A retail audit by the Ifakara Health Institute found more than twice as many retailers selling ITNs than are registered to handle vouchers; 67% of retailers would like to handle them.

<sup>33</sup> Before mid-2009, several manufacturers produced polyester nets bundled with IRKs for the TNVS. They provided the nets to wholesalers who distributed them to accredited retailers and returned redeemed vouchers.

**Figure 5. TNVS Voucher/Net Cycle, mid-2009 to Present**



Source: MEDA.

Steps in the voucher/net cycle include the following:

- MEDA orders vouchers from the security printer based in South Africa (current price U.S. \$0.07/voucher). Each voucher has a unique number and barcode.
- MEDA issues vouchers in the form of voucher books (25 vouchers) to each DMO.<sup>34</sup> Voucher books are usually delivered by a MEDA regional manager.
- DMOs provide an initial three-month supply of vouchers to participating health facilities in the district. Thereafter, the DMO provides new voucher books to facility staff in exchange for books containing voucher stubs.
- Vouchers are distributed by health facilities to the eligible target groups (pregnant women/infants). Facility staff complete information on vouchers and stubs on voucher recipients and issuing facility.
- The mother goes to a TNVS retailer, provides the voucher, and pays the top-up amount for an ITN.
- Each ITN is packaged with a unique barcode on a sticker in its packaging. The retailer removes the barcode sticker and sticks it onto the voucher received from the mother.
- The retailer exchanges the completed vouchers (i.e., those including the health facility recorded information as well as both barcodes) against new nets delivered by the manufacturer.

<sup>34</sup> MEDA tends to issue more vouchers to DMOs than MEDA has funds to redeem (see Figure 8).

- The manufacturer is paid by MEDA against the provision of completed vouchers. Faulty vouchers are detected and blocked in MEDA's system and are not paid out.
- The completed vouchers are scanned by MEDA.

Since TNVS' start in 2004, the average transit time for a voucher from issuance to DMO to its return by the manufacturer to MEDA offices in Dar es Salaam is about 280 days.<sup>35</sup> This long transit time makes it difficult for MEDA to gauge its financial liabilities based on the number of vouchers issued, as only 70 to 80% of vouchers issued by a RCH provider to a mother or pregnant woman are eventually returned.

## **INSTITUTIONAL ROLES AND RESPONSIBILITIES**

### **Policy Development and Program Oversight**

The MoHSW, through the NMCP's ITN Cell, is responsible for providing policy direction and oversight for the TNVS. A National Insecticide Treated Nets Programme (NATNETS), whose membership includes government, NGOs, program implementers, and donors, meets every quarter to review progress and coordinate efforts.

### **Day-to-day Administration and Management**

MEDA's office in Tanzania is responsible for overall day-to-day management of the logistics component of the TNVS. MEDA is under contract with the MoHSW to provide services financed from GFATM grants (e.g., PWVs, U5CC, and UCC) and services provided under a cooperative agreement with USAID to manage IV implementation. At a national level, MEDA oversees the following processes:

- Contracting for the printing of vouchers
- Tendering for supply side inputs and services<sup>36</sup>
- Monitoring manufacturer performance
- Scanning returned vouchers and checking that returned vouchers pass required controls to minimize corruption in voucher distribution and redemption
- Coordinating with NATNETS members
- Managing relations with and reporting to the NMCP and donors

In 2006, after PWV coverage had been scaled up to national levels, MEDA had 21 regional managers responsible for delivering printed vouchers to DMOs and supervising voucher-related activities at health facilities and retailers. These staff also help resolve regional and district-specific implementation challenges that caused lags in the voucher cycle. In 2008, MEDA increased to 32 the number of regional staff on the mainland to backstop logistics and management for U5CC/UCC introduction and implementation. Each region team had a vehicle. On June 30, 2011, due to the end of GFATM Round I and Rolling Continuation Channel (RCC) funding, MEDA reduced the number of regional managers to eight. Each regional manager is scheduled to visit one region for three weeks a month, culminating in one MEDA supervisory visit to all regions per quarter. MEDA plans to monitor and evaluate the impact of this new model on regional-level supervision.

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<sup>35</sup> The time between voucher issuance to a DMO and return to MEDA varies by implementation year and district.

<sup>36</sup> MEDA's contract with net manufacturers currently includes net production and delivery to retailers, collection of redeemed vouchers, and recruitment and training of new retailers.

MEDA is embarking on a pilot of an electronic voucher. The e-voucher concept would require health facility personnel to activate a TNVS voucher through sending a short message service (SMS) with a clinic and a pregnant woman/infant registration number to MEDA. It is planned that e-vouchers will expire after 60 days, as compared to the average number of days (~280) between the time vouchers are distributed to DMOs and returned to MEDA. Expected benefits of the e-voucher model are as follows:

- Obtaining more precise information on the length of time between MEDA's issuance of vouchers and their issuance by facility staff to eligible target groups by region and district
- Reducing the size of outstanding liabilities in the form of vouchers that are issued by health facilities but not redeemed by households for long periods of time<sup>37</sup>
- Encouraging households to acquire a LLIN during the time they would provide the most benefit (i.e., pregnancy and infancy)
- Reducing the responsibilities of MEDA regional supervisors with respect to distribution of voucher books and collection of voucher stubs

The e-voucher pilot is currently budgeted at U.S. \$186,000. Rollout of the e-voucher to all regions will be MEDA staff-intensive and may require additional financing to ensure the expected efficiency gains accrue to the program.

## **Net Manufacturing**

The LLINs that are currently distributed via the TNVS are produced by a single Tanzanian manufacturer, A to Z Textile Mills Limited. Its factory, the biggest producer of ITNs in Africa, has a volume of 30 million LLINs a year. The LLINs produced (Olyset brand) are made from a polyethylene material impregnated with permethrin. A to Z has some 7,000 employees in Arusha, 75% female. Its contract with MEDA requires it to deliver nets to each retailer. A to Z's contract with each retailer details the tasks required of A to Z and the retailer in net distribution and voucher collection. Net distribution and logistics are carried out by two to three salespeople in each region. A to Z uses 170 trucks (18 large SCANIA trucks and 152 TATA 71 trucks) to eliminate the need for zonal net warehousing. When needed it subcontracts with owners of 4x4 vehicles, bicycles, and boats to deliver the TNVS LLINs.

In August 2009, MEDA signed a one-year contract with A to Z to produce and deliver 4 x 6 x 7 LLINs for the TNVS. Under the contract the company was paid \$6.20 for each verified PWV or IV it returned to MEDA. In August 2010, the contract was extended to August 2011. In March 2011, MEDA signed a separate contract with A to Z to produce and deliver 5 x 6 x 7 feet LLINs. Under this contract, the firm agreed to be paid \$5.90 for each returned IV as of June 12, 2011. This net size and price will also apply to PWVs in September 2011 after the end of the contract with GFATM funds.

## **Communications**

The end of the SMARTNET project in 2007 resulted in a decrease in social marketing promotion of ITNs/LLINs, including promotion of demand for ITNs distributed through the TNVS.<sup>38</sup> While both PSI<sup>39</sup> and the Communication and Malaria Initiative in Tanzania (COMMIT)

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<sup>37</sup> Other options for the e-voucher validity period are under consideration, e.g., nine months. The e-voucher pilot test should assess the need for a longer validity period in light of seasonal spikes in the number of vouchers returned, which suggest households often wait until the rainy season to redeem TNVS vouchers (see Section IV).

<sup>38</sup> Insufficient information was available for the team to evaluate the possibility or extent that donor funds previously allocated for social marketing under SMARTNET may have been allocated to other cost items associated with the U5CC and UCC mass campaigns.

project have supported various elements of the NMCP's *Communication Strategy for Malaria Control Interventions, 2008-2013*,<sup>40</sup> neither project appears to have been tasked with providing social marketing promotion of ITNs/LLINs, including through distribution through the TNVS.

## Monitoring and Evaluation

MEDA tracks several measures of output – including the number of vouchers redeemed and number of vouchers returned – and calculates voucher redemption and return rates.<sup>41</sup> MEDA publishes statistics on select levels and rates associated with TNVS vouchers in its Quarterly Progress Reports.<sup>42</sup> In addition, researchers at the Ifakara Health Institute, in collaboration with the London School of Hygiene and Public Health, have undertaken a series of national and subnational qualitative studies and quantitative surveys representative of the TNVS (a list of references is provided in Annex C).

## Financing

Financing for design and national rollout of the PWV between October 2004 and May 2006 was financed by a Round I grant from the GFATM. In November 2006, the USAID/President Malaria's Initiative (PMI) started provision of grant financing for the development and rollout of the IV component of the TNVS. Between November 2007 and March 2009, USAID/PMI financed all expenditures for the TNVS (both the PWV and IV components) as GFATM grant funds were not available. GFATM Round I RCC grant financing for the PWV started in April 2009 and ended on June 31, 2011. For the period July 1, 2011, to October 31, 2011, USAID/PMI is again the sole financier for all TNVS operational costs. However, reimbursement for variable costs associated with each PWV will continue to be paid with residual monies from the GFATM grant during this period.<sup>43</sup>

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<sup>39</sup> PSI continues to track sales of *ngao* ITN re-treatment kits and supports Malaria Haikubaliki radio spots, but its social marketing efforts focus on reproductive health and HIV/AIDS ([http://www.psi.org/resources/bcc/search/results?page=2&country=49&audience=&theme=&channel=&type=&keywords=&bcc\\_search\\_submit\\_button=Search](http://www.psi.org/resources/bcc/search/results?page=2&country=49&audience=&theme=&channel=&type=&keywords=&bcc_search_submit_button=Search)), accessed 10/15/11.

<sup>40</sup> Examples of COMMIT's support to the NMCP's malaria prevention and control communication strategy and activities include: road shows and mobile video unit presentations; intensive household and community-based communication activities in 11 endemic regions through community change agents; establishment of the Journalists Against Malaria Network; and technical and financial support for malaria-related radio programming (<http://www.comminit.com/africa/content/communication-and-malaria-initiative-tanzania-commit>, accessed on 10/15/11).

<sup>41</sup> MEDA's definitions of monitoring and evaluation metrics appear under "Performance – Outputs" in Section IV.

<sup>42</sup> To date, MEDA's quarterly reports have not provided in-depth data analysis for understanding factors associated with geographic and temporal changes in redemption rates. Such analysis could inform TNVS policy and implementation decision-making.

<sup>43</sup> DfID has indicated to the NMCP that it is interested in providing 36 months of financing to support the PWV starting around the last quarter of CY2011. However, at the time of the evaluation, DfID's proposal had not yet been formalized in a project document.



## IV. TNVS—PERFORMANCE, COSTS, COST-EFFECTIVENESS

### PERFORMANCE

#### Methodological Considerations

The following section discusses trends in TNVS outputs and outcomes over time. These trends are influenced by multiple factors on the demand and supply sides (see Section VI). Variables that may affect household demand for TNVS vouchers and ITNs include the following:

- Household demographic and socio-economic characteristics<sup>44</sup>
- Households' perceived risk of malaria exposure
- Households' preferences regarding ITN size, shape, and color
- Attributes of bed net-related BCC messaging<sup>45</sup>
- Type of clinical personnel and other quality attributes of public sector and mission health services related to RCH services<sup>46</sup>
- Monetary factors (i.e., top-up costs of the TNVS net and prices of other ITNS and other goods)
- Costs of transport to facilities or retailers
- Opportunity costs of time going to and waiting at health facilities or retailers<sup>47</sup>
- Implementation of concurrent malaria control efforts, e.g., IRS and ITN mass distribution campaigns

Variables that may affect the supply of TNVS vouchers/ITNs include the following:

- Availability of vouchers in clinics
- Availability of LLINs at retailers
- Sufficient retail outlets within easy walking distance of people's homes<sup>48</sup>
- Provision of outreach services by clinics and inclusion of the TNVS in outreach
- Inclusion of ITN-related activities in district health plans<sup>49</sup>
- Changes to TNVS design and implementation arrangements over time

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<sup>44</sup> For example, nomadic populations would not be readily served by a program design in which vouchers are distributed from fixed public health facilities.

<sup>45</sup> Attributes of BCC that could affect voucher and net coverage and use include target audience; communication channel; degree to which the message has been tailored for different ethnic, language, and religious groups; and timing and frequency of the communication/messaging.

<sup>46</sup> Health service attributes of relevance to PWV/IV uptake and redemption include type, number, and presence of health personnel and other service quality factors.

<sup>47</sup> Consumers' opportunity costs related to obtaining vouchers/bed nets reflect the number and location of participating RCH clinics and retailers, time and monetary costs for transportation to RCH clinics and retailers, and seasonally related difficulties in transportation.

<sup>48</sup> The willingness of retailers to participate and adequacy of LLIN supply at participating retailers reflect retailers' scale/scope and financial conditions such as operating capital, cash flow, and desired product-specific profit margin.

<sup>49</sup> Some district health plans reviewed by the team did not include discussion of TNVS ITN supply issues. Inclusion of plans regarding TNVS programming in district health plans would signal that MoHSW personnel are giving attention to voucher and net supplies.

- Changes in donor financing level or timing affecting the scale and efficiency of MEDA operations
- Geographic and seasonal factors affecting the monetary and time costs associated with retailers' obtaining nets (or manufacturer's distribution of nets to retailers)
- Changes in world prices or exchange rates affecting the domestic cost of raw materials used to produce nets or petroleum products related to MEDA supervision or net distribution

The time available for this evaluation did not permit the authors to undertake multivariate analysis with available survey and program data to test the individual/joint significance of demand or supply-side factors related to TNVS output and outcome levels over time.<sup>50</sup>

## Outputs

MEDA tracks several measures of TNVS output, including the number of vouchers *redeemed* (defined as the number of vouchers returned by the manufacturer for which matching voucher book stubs were also returned), and the number of vouchers *returned* to MEDA from the manufacturer, regardless of whether a matching voucher book stub was returned by DMOs or not.<sup>51</sup>

Since the start of the TNVS, the number of PWVs returned has fluctuated from quarter to quarter<sup>52</sup> but started to show a pattern of decline after introduction of the IV. The number of IVs returned has similarly fluctuated by quarter, though never reaching the numbers of PWVs returned from 2005 to mid-2008. The total of PWVs/IVs returned by quarter remained at or above 300,000 through 2008, showing pronounced seasonal peaks during the annual rainy season from 2006 to 2010 (see Figure 6). The exception to these observed trends occurred in 2009, when the total number of vouchers returned did not increase noticeably during the rainy season and subsequently declined to very low levels through the final quarter of calendar year 2009. Reasons for this observed decline may include: i) nationwide distribution of nets through the U5CC between mid-2009 and mid-2010; ii) significant increases in the top-up amount until the final quarter of 2009 (see Table 1); and iii) MEDA's reduced replenishment of vouchers in the months leading up to introduction of the new voucher.

The total number of both vouchers returned rose steeply to their highest levels with the start of the rainy season in 2010. Aside from the rainy season, the increase in returns may be related to households that had obtained but not yet redeemed TNVS vouchers electing to do so immediately after adoption of the upgraded voucher with a fixed top-up of TZS 500 in the final quarter of CY2009; alternatively, the increase may be due to households in areas where U5CC registration had been completed – but where LLINs had not yet been distributed – deciding to obtain or redeem a voucher for an LLIN.

Levels of quarterly voucher returns fell again for the remainder of 2010. Reasons for this decline may include: i) lower household demand for bed nets after the end of the rainy season; ii) temporary stock-outs of vouchers due to the high demand for vouchers in early 2010; iii) delays

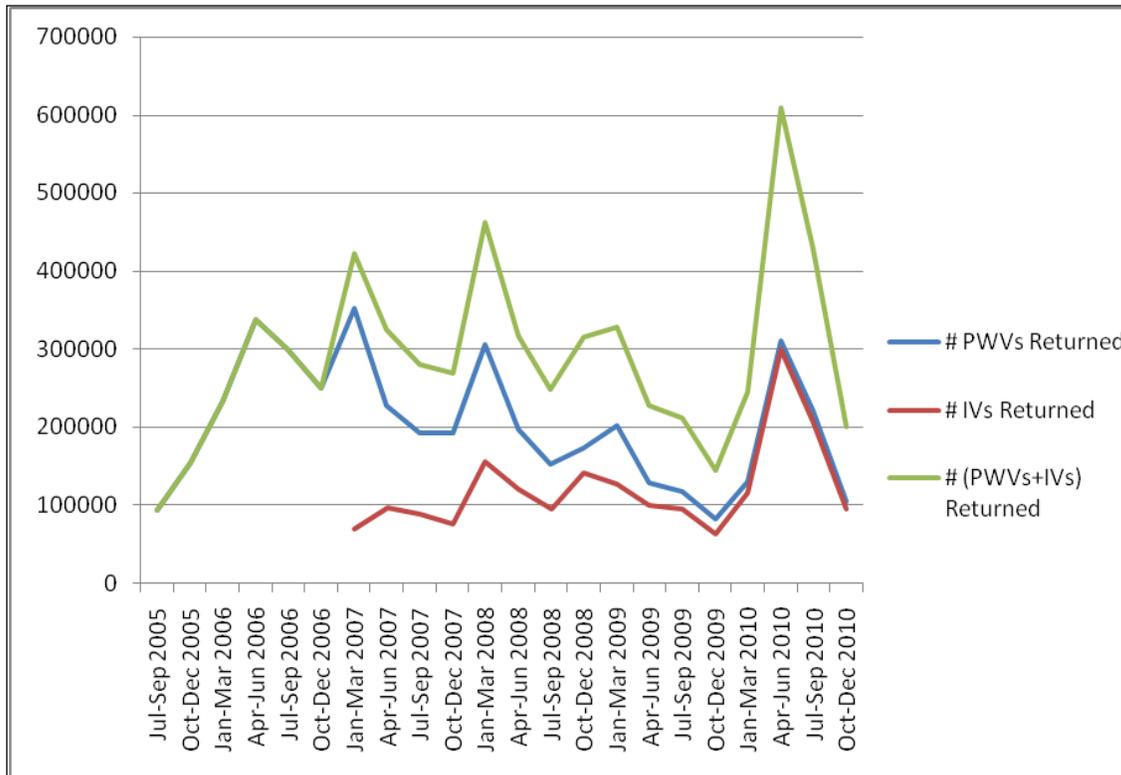
<sup>50</sup> Note: At least one study has carried out statistical analysis of TNVS data for 2006 to 2008 (Marchant et al., February 2009). This study largely examined the statistical significance of differences among categories for a single variable (e.g., income quintile) and bivariate relationships between two variables. As a result, it cannot be used to evaluate the relative importance among multiple factors to measured levels of outputs and outcomes.

<sup>51</sup> MEDA records monthly voucher returns by clinic, district, regional, and national levels of aggregation.

<sup>52</sup> Fluctuation in the number of vouchers returned each month reflects factors related to the supply and demand of bed nets and vouchers; it may also be related to events that interrupt the regular return of vouchers to MEDA or data processing. This "noise" is reduced via aggregation of monthly voucher returns to quarterly or annual totals.

in delivery of TNVS nets; iv) contractual difficulties that delayed amendment of the contract between MEDA and A to Z to include new PMI funds for the IV, resulting in A to Z's cessation of net provision to retailers between late September and mid-November 2010; and v) possible lower demand for TNVS nets in anticipation of or during actual distribution of UCC nets between October 2010 to April 2011<sup>53</sup> (see Figure 6).

**Figure 6. Number of PWVs and IVs Returned by Quarter, TNVS, 9/2005 to 12/2010**



Source: Authors' calculations based on MEDA monthly data.

The apparent seasonality in quarterly returns of TNVS vouchers may have important implications for TNVS design and implementation. For example, it is not clear whether adoption of a 60-day validity period for the e-voucher will change some households' current preferences to set aside vouchers to redeem during the rainy season. Assessment of this issue should be included as part of the e-voucher pilot effort. Alternatively, the re-stocking of TNVS nets only against vouchers collected by retailers may contribute to the development of net stock-outs during the rainy season. This gap could be especially problematic in remote areas where it is costly to re-stock retailers, especially during the rainy season, which reduces accessibility. Approaches to reduce rainy season stock-outs should be explored – e.g., the net manufacturer could provide retailers with additional TNVS nets on credit before the rainy season, or buffer stocks of nets could be placed with health facilities or local government in remote areas.

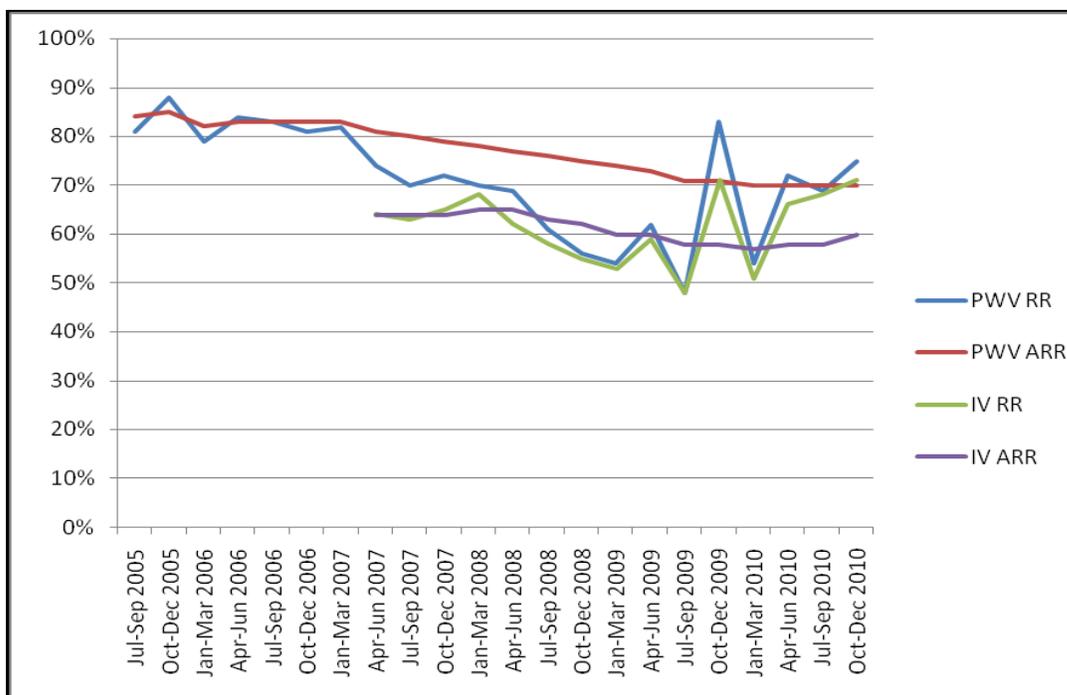
MEDA also calculates other metrics for program monitoring and reporting, including the voucher redemption rate, defined as the number of PWV and IV vouchers returned to MEDA

<sup>53</sup> Analysis of quarterly voucher returned for 2011 and 2012 will help determine whether the UCC temporarily depressed demand for TNVS vouchers and nets. In addition, these data will provide information helpful for understanding whether pre-campaign demand patterns for TNVS vouchers/nets (e.g., seasonal) re-assert themselves once the UCC is complete.

for which MEDA has a matching voucher stub, divided by the number of total voucher stubs returned to MEDA. The redemption rate measures the gap between the number of vouchers redeemed and number of vouchers issued by participating health facilities.<sup>54</sup> The presence and size of this gap can vary for several reasons. For example, households lose vouchers they have obtained from health facilities or delay in redeeming them, either due to a preference for the time period for acquiring the ITN or because they lack funds for the top-up; there is also the issue of stock-outs of either vouchers or nets. In addition, the Prime Minister’s Office – Regional Authorities and Local Governments (PMO-RALG) health personnel or MEDA regional supervisors at the district level may be unable to collect or return voucher stub books to MEDA (perhaps due to a diversion of effort into implementation of a mass campaign) or MEDA may experience delays in verifying or processing voucher returns due to changes in key staff or software.

Quarterly redemption rates for PWVs declined between Q3 2005 and Q3 2009; redemption rates for IVs declined between Q2 2007 and Q3 2009, but sharply increased in Q4 2009 before declining again in Q1 2010 and thereafter remaining above 70%. Accumulated redemption rates for PWVs fell from 80 to around 70% between 2005 and 2010, whereas accumulated IV redemption rates have remained at about 60%.<sup>55</sup> The lower the accumulated redemption rate, the larger the outstanding potential financial liabilities of MEDA with respect to issued vouchers (see Figure 7).

**Figure 7. Quarterly and Accumulated Redemption Rates, TNVS, July 2005–December 2010**



Notes: RR – quarterly redemption rate; ARR – aggregate redemption rate.  
Source: Authors’ compilation of MEDA statistics.

<sup>54</sup> MEDA also calculates the voucher utilization rate, defined as the number of PWV and IV vouchers returned, whether or not a matching stub has been returned, divided by the number of total vouchers of the same type originally issued to DMO offices.

<sup>55</sup> Reasons for the lower aggregate redemption rate of IVs as compared to PWVs may include the IV’s later introduction during a period of higher variable top-ups, when households may have been less likely to procure an IV net if they had already procured a net with a PWV.

Significant fluctuations in PWV or IV voucher returns and redemption rates increase uncertainties and may contribute to higher program costs due to cash-flow management challenges or increased costs for maintaining larger net stocks. Better understanding of the sources of variation and cumulative size of the gap in voucher redemptions is needed to determine how much the redemption rate can be improved through changes in program design (e.g., the e-voucher) or program management enhancements, as compared to being relatively fixed due to a link to beneficiary preferences and behaviors. Otherwise, measures intended to achieve greater cost-savings may instead result in reductions in program outputs by reducing MEDA's cash flow, or possibly increasing stock-outs of vouchers or affecting net manufacturer decisions regarding TNVS net production levels and delivery schedule.

## Outcomes

Coverage of target vulnerable groups with TNVS nets was adopted as the outcome measure for the evaluation, with PWV coverage defined as the number of PWVs returned to MEDA in a calendar year, divided by the estimated annual number of births and IV coverage as the number of IVs returned to MEDA in a calendar year, divided by the estimated number of infants under 1 year.<sup>56</sup> The number of births and infants under 1 per region in any calendar year were taken from the National Bureau of Statistics (NBS) projections for each region, based on 2002 census information (NBS, 2002).

### National-level Coverage Estimates

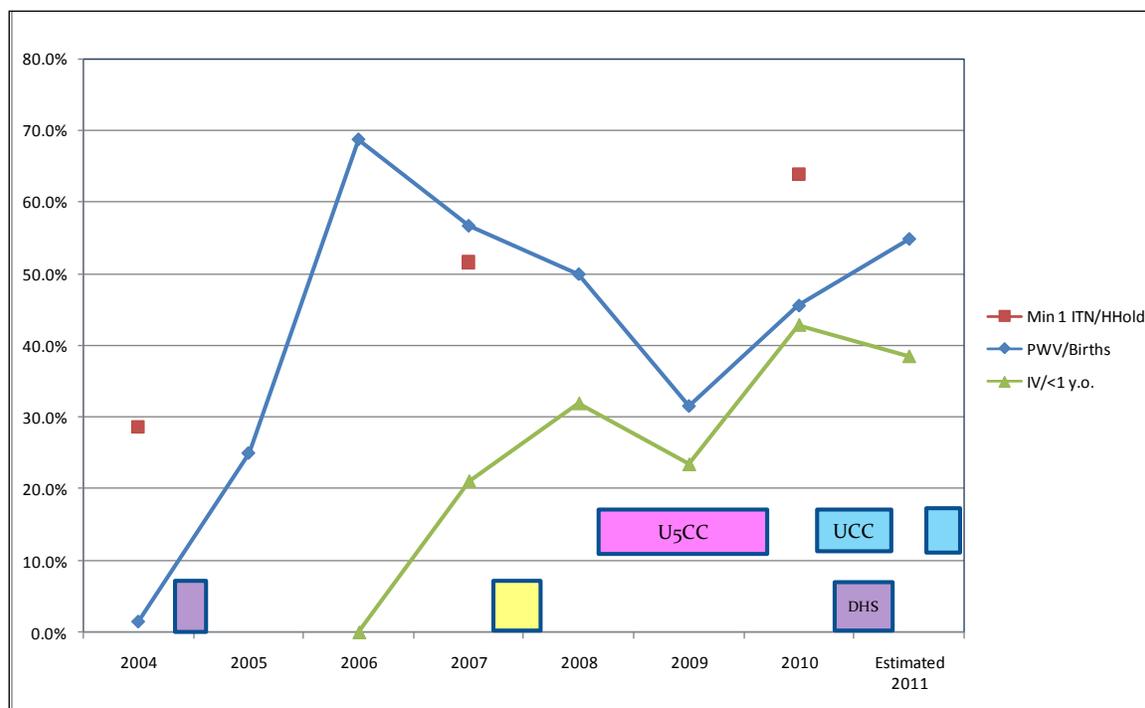
Evaluation estimates of annual national-level coverage of PWVs and IVs increased during their rollout phases (2004-2006 and 2006-2008, respectively). Estimated coverage for both vouchers declined in 2009 and increased in 2010. For 2011, PWV coverage of pregnant women is estimated as 55% (~22% lower than PWV coverage in 2006); coverage of infants with IVs will be 40% (~33% higher than the IV coverage in 2008) (see Figure 8).<sup>57</sup> Coverage estimates for 2011 suggest that TNVS coverage in 2011 will be slightly above levels immediately preceding the mass campaigns. It is not yet clear whether TNVS coverage in the future will increase to significantly exceed pre-campaign TNVS coverage.

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<sup>56</sup> MEDA currently estimates TNVS coverage by dividing the number of PWVs plus IVs returned by the estimated number of pregnant women plus infants attending RCH clinics. MEDA estimates the number of pregnant women and infants attending an RCH clinic by multiplying i) the total population estimate for 2006, ii) estimated percent of the total population that are pregnant women or infants (4%), and iii) estimated percent of the target populations that attend an RCH clinic (90%). MEDA's approach under-estimates and over-estimates annual TNVS coverage for years before 2006 and after 2006, respectively, and is expected to be inaccurate for regional estimates of coverage.

<sup>57</sup> PWV and IV coverage for 2011 were estimated by multiplying the PWVs or IVs returned for the first four months by 3 and dividing by the estimated number of annual births or the number of infants, respectively.

**Figure 8. Minimum 1 ITN/Household vs. TNVS PWV and IV Coverage, 2004 to 2011**



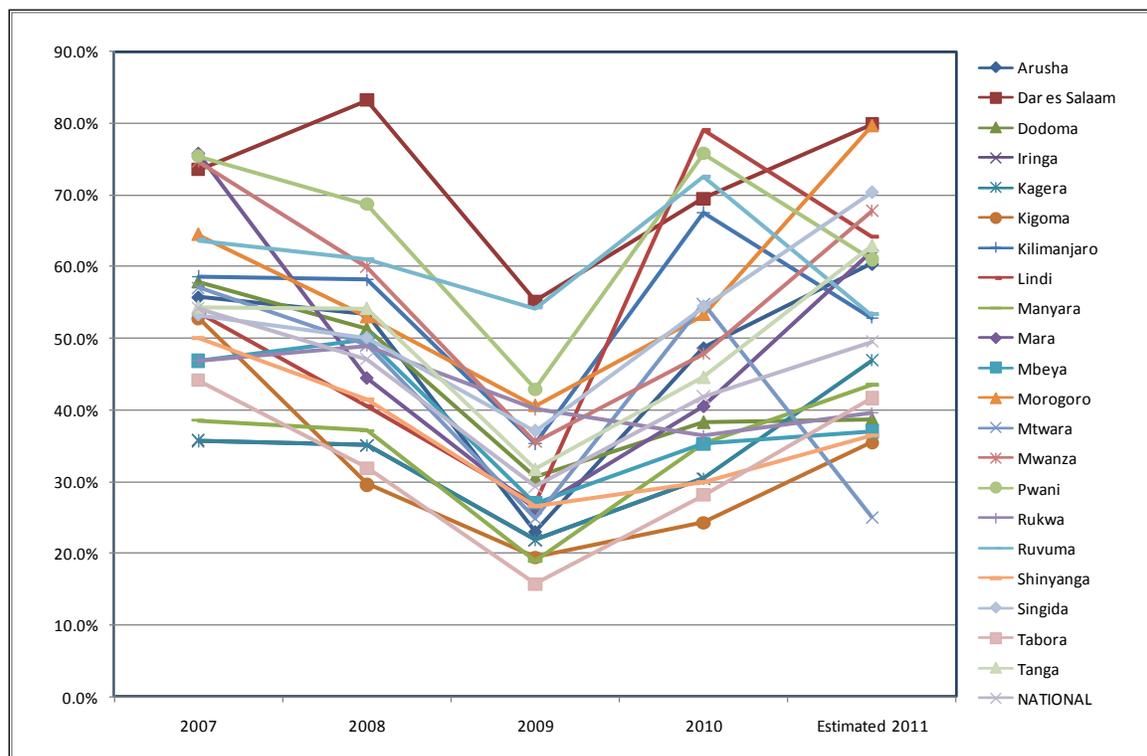
Source: Authors' calculations and TDHS 2004/7, THMIS 2007/8, TDHS 2010.

### Pregnant Woman Voucher Coverage by Region

A comparison of PWV coverage by region for 2007 to 2011 shows variation for both year to year within the same region (intra-regional) as well as between regions (inter-regional) for the same year. Coverage in 2007 ranged from a low of 35% for Kagera to a high of 75% for Dar es Salaam and Pwani. PWV coverage for all regions declined between 2007 and 2009, in some regions significantly. The decline was attributed to the significant increase in the amount of the variable top-up to over TZS 2500. Subsequent to the shift to the upgraded voucher with fixed top-up in late 2009, the demand for PWVs increased, but much more significantly in some regions than others<sup>58</sup> – perhaps reflecting differences in timing of the rollout of the upgraded voucher. PWV coverage appears to be increasing in most regions in 2011, with the exception of declines observed in Lindi, Mtwara, Pwani, and Ruvuma (see Figure 9).

<sup>58</sup> The improved voucher was rolled out to different regions at different times, perhaps contributing to the observed variations in regional increases in PWV redemptions/returns.

**Figure 9. Number of PWVs Returned/Number of Annual Births, by Region and by Year, 2007 to 2011**



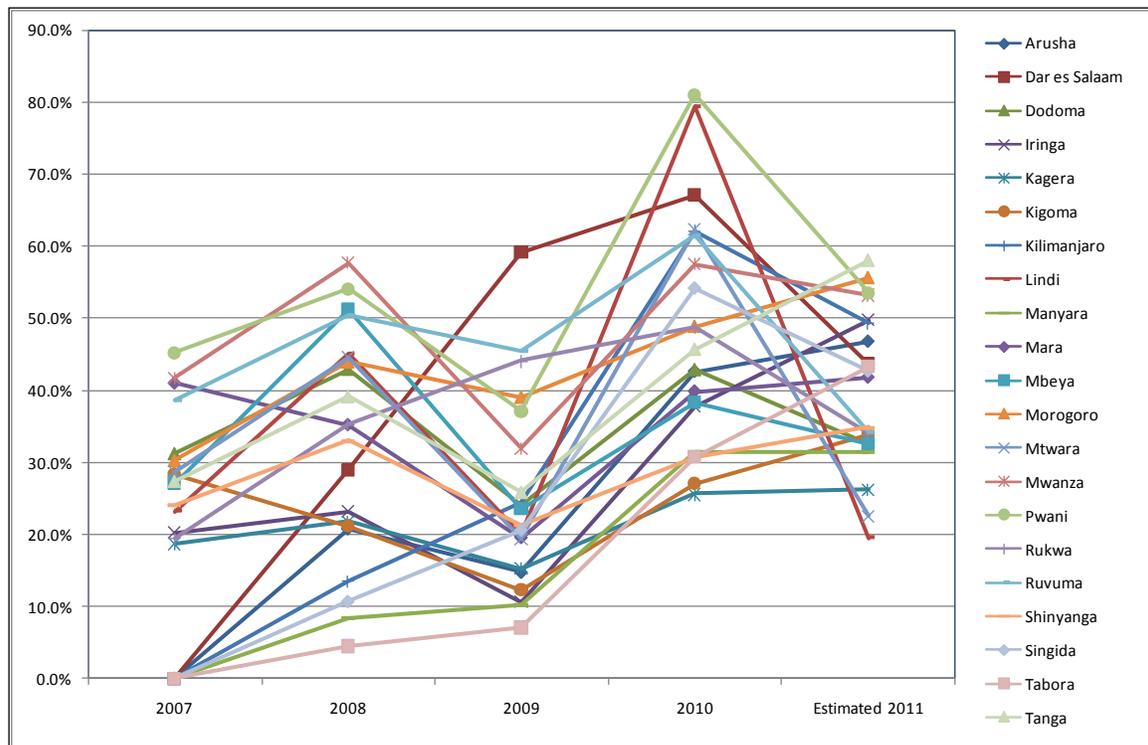
Source: Authors' calculations based on: i) MEDA data on returns of PWVs; ii) projections of the number of births based on the 2002 census (NBS, August 2006); all measures by region and calendar year.

### Infant Voucher Coverage by Region

Comparison of IV coverage<sup>59</sup> by region for 2007 to 2011 shows a somewhat different pattern of variation compared to the PWV, although there is variation both year to year within the same region and variation among regions for the same year. In 2007, several regions had not yet started IV implementation (i.e., Arusha, Dar es Salaam, Kilimanjaro, Manyara, Singida, and Tabora), yet coverage rates had already reach 40 to 45% for Mara, Mwanza, and Pwani. Infant voucher coverage increased by varying amounts between 2007 and 2008 in all regions except for Kigoma, where it declined. Between 2008 and 2009, IV coverage declined (with the notable exception of Dar es Salaam). However, unlike the PWV, the decline in regional coverage was not significant in some regions, possibly reflecting the already lower rates of IV coverage. In 2010, IV coverage increased in all regions, though more in some regions than in others, resulting in a widening of inter-regional coverage rates. By 2011, estimated IV coverage levels appear to be leveling off or in some regions declining more than PWV coverage (see Figure 10).

<sup>59</sup> The evaluation estimates for IV coverage are significantly over-estimated for the years 2010 and 2011. This is because prior to 2010, the TNVS provided the IV just at the clinic visit for measles vaccination (ideally at 9 months), whereas from the end of 2009 the TNVS has provided IVs to mothers at every visit for infant/childhood vaccinations. Thus, in 2010 and 2011, the IV coverage denominator should be expanded, perhaps to include all children in eligible age groups that receive childhood vaccinations.

**Figure 10. Number of IVs Returned/Number of < 1 Year Olds, by Region and by Year, 2007 to 2011**

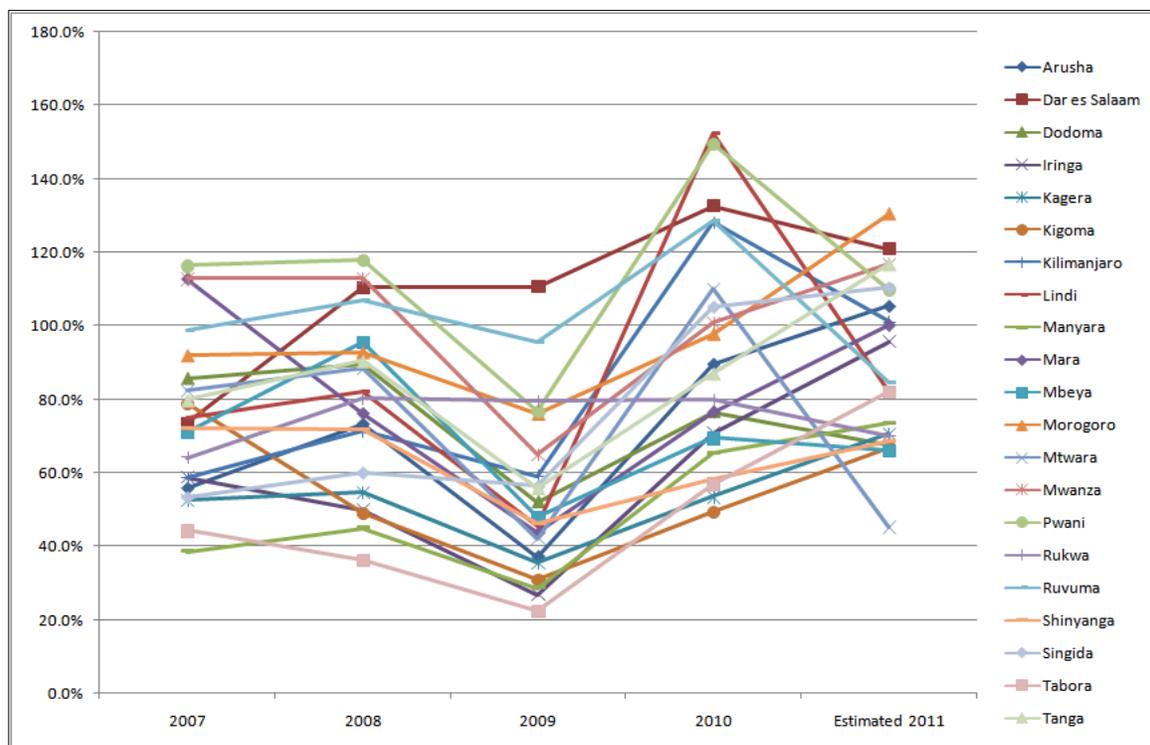


Source: Authors' calculations based on: i) MEDA data on returns of IVs; ii) projections of the number of infants (0-1 years) based on the 2002 census (NBS, August 2006); all measures by region and calendar year.

### Pregnant Woman Voucher Plus Infant Voucher by Region

Trends in national-level PWV or IV quarterly voucher returns lack a clear pattern while total TNVS voucher returns (PWV and IV) clearly suggest a seasonal pattern in voucher redemptions/returns (see Figure 6). A plot depicting total TNVS voucher returns (PWV + IV) by region and year shows no clear pattern. It appears that regions show less variability in relative coverage levels (i.e., coverage ranking between regions) than PWV or IV coverage separately (see Figure 11). Further study is required to determine the reason for different PWV/IV coverage patterns and for both vouchers together.

**Figure 11. Number of PWVs + IVs Returned/Number of Births by Year, 2007 to 2011**



Source: Authors' calculations based on: i) MEDA data on returns of PWVs plus IVs; ii) projections of the number of births based on the 2002 census (NBS, August 2006); all measures by region and calendar year.

## FINANCIAL COSTS

### Methodological Considerations

Significant resources have been absorbed by the TNVS since its inception in 2004. This evaluation considers only the financial cost of resources associated with the cycle linking voucher distribution with net provision and does not consider other net-related costs that may be important for TNVS to function optimally.<sup>60</sup> The major advantages of using this measure is that costs are clearly associated with the distribution of TNVS nets and it can be calculated in a standard manner over a number of years.

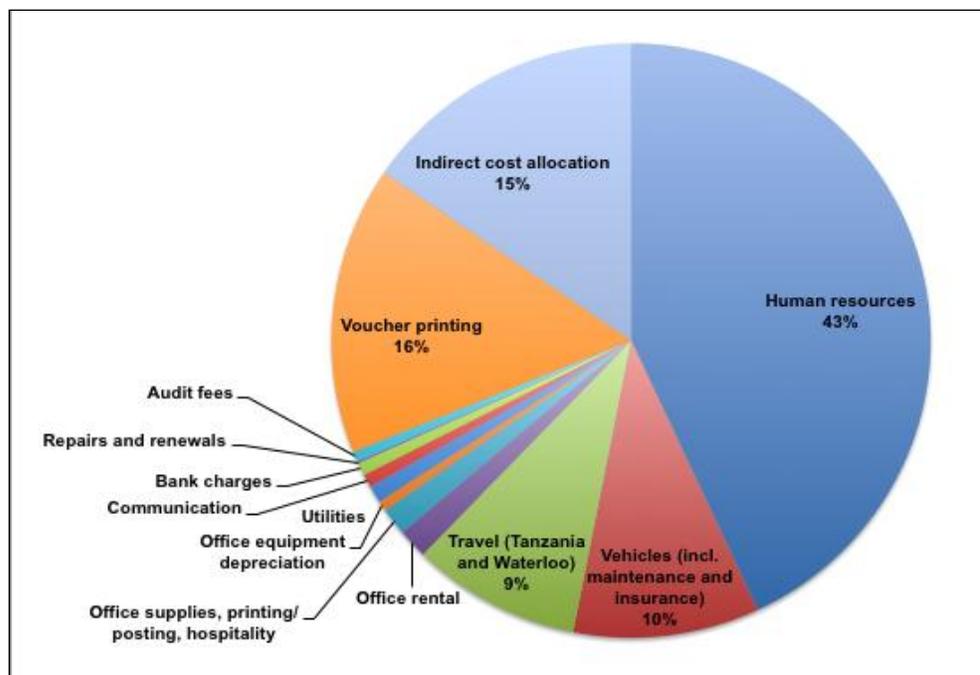
### Fixed Costs

MEDA's records for the GFATM grant budgets/expenditures do not allocate fixed cost line items (e.g., personnel, operating expenses, vehicles, and travel) between the TNVS and the mass campaigns. MEDA allocates GFATM's fixed cost budgets between programs according to a rule of thumb, i.e., that 60% of its contribution to MEDA's fixed cost line items (e.g., personnel, operating expenses, vehicle, and travel) are allocated to the TNVS and 40% to the mass

<sup>60</sup> The evaluation does not include other net-related costs that may be important for the TNVS – health officials/clinic staff time costs associated with TNVS implementation, costs of BCC or other demand-generation efforts, or the opportunity costs to households of obtaining TNVS nets. An analysis (Mulligan, Yukich, and Hanson, 2008) included all financial as well as rough estimates of economic costs to estimate TNVS cost-effectiveness. Approaches for cost-effectiveness analysis of distribution of ITNs are discussed in Kolaczinski and Hanson, 2006.

campaigns.<sup>61</sup> In comparison, USAID/PMI budgets clearly provide fixed cost budget/expenditure line items by program. MEDA's budget/expenditure data for January to March 2011 indicate that human resources constitute 43% of the TNVS' estimated total fixed costs. Other line items that accounted for more than 10% of total fixed costs were the printing of TNVS vouchers<sup>62</sup> (16%), indirect costs (15%), and vehicle operations (10%) (see Figure 12).<sup>63</sup>

**Figure 12. TNVS Line Items as Shares of Total Fixed Expenditures, January-March 2011**



Source: MEDA actual expenditures from GFATM Round 1 and USAID AMCC grants.

## Variable Costs

The TNVS net subsidy comprises the largest component of TNVS net variable costs. The subsidy is the amount MEDA pays to the net manufacturer for each net sold. Since introduction of the upgraded voucher in 2009, the subsidy has also included the cost of LLIN distribution from the manufacturer directly to retailers participating in the program. In FY 2010, the subsidy was U.S. \$6.20 per 4 x 6 x 7 foot (or 120 x 180 x 210 cm) LLIN; thus, the total paid for bed nets and delivery was nearly U.S. \$9.3 million (1.5 million vouchers redeemed in 2010). In March 2011, MEDA and A to Z entered into a new contract (financed by USAID/PMI), whereby each IV voucher redeemed would be for a 5 x 6 x 7 foot (or 150 x 180 x 210 cm) LLIN, with A to Z paid U.S. \$5.90 per validated, redeemed voucher returned to MEDA. PWVs continue to be redeemed for U.S. \$6.20 against residual Global Fund monies. The top-up amount of TZS 500 (less than 10% of the net subsidy) paid by the voucher holder to the retailer adds less than 10% to the final variable costs of net production and delivery to retailers.

<sup>61</sup> Damas Mugashe, personal communication, June 30, 2011.

<sup>62</sup> Strictly speaking, the cost of printing vouchers is not a fixed cost in that it varies with the number of vouchers printed, with the number of vouchers ordered assumed to reflect the number of vouchers distributed. If an e-voucher is adopted, voucher printing costs may not continue to be a fixed cost for the program.

<sup>63</sup> While MEDA aims to obtain uniform operations across regions, there has likely been variation in regional expenditures due to higher numbers of staff for large, sparsely populated regions as well as higher transport costs. Thus, technically, TNVS expenditures by region are semi-fixed in that they vary by region, though necessarily in proportion to the number of vouchers distributed in the region.

## COST-EFFECTIVENESS

### Methodological Considerations

For purposes of this evaluation, the measure of TNVS cost-effectiveness is defined as MEDA's financial costs<sup>64</sup> per output, i.e., budget expenditure per voucher returned to MEDA (assumed equivalent to a beneficiary receiving a TNVS ITN) in a fiscal year.

**Table 2. Estimated Cost per Voucher Returned/Net Distributed, TNVS, July 1, 2009–June 30, 2010**

		July 1, 2009 - June 30, 2010
<b>GFATM budget actuals in USD (excl. mass campaigns; *=60% of total)</b>	Personnel*	709,787
	Operating expenses*	492,755
	Vehicle and travel*	395,333
	Voucher-related costs (inkl. printing) (GFATM share)	169,982 1,767,858
<b>USAID/PMI budget actuals in USD (excl. USCC support)</b>	Personnel	387,509
	Other (USAID/PMI Share)	892,539 1,280,048
	<b>Total voucher-attributable fixed costs in USD</b>	<b>3,047,906</b>
<b>IV subsidy in USD</b>		<b>2,480,992</b>
<b>Operational Cost Share in USD</b>		<b>1,444,420</b>
No. of IV returned		574,582
<b>Costs per IV in USD</b>		<b>6.83</b>
<b>PWV subsidy in USD</b>		<b>3,487,512</b>
<b>Operational Cost Share in USD</b>		<b>1,603,485</b>
No. of PWV returned		637,857
<b>Costs per PWV in USD</b>		<b>7.98</b>

Source: Authors' calculations based on MEDA financial data.

U.S. \$7.98 per pregnant woman voucher<sup>65</sup> (see Table 2). MEDA's total voucher-attributable fixed costs for the following fiscal year 2011 (July 1, 2010, to June 30, 2011) were U.S. \$4,794,064. Total fixed costs are allocated to either the PWV or the IV according to the share of vouchers returned in each category (i.e., 627,754 IVs and 761,386 PWVs) by the total number of vouchers. Total variable costs per voucher category are calculated by multiplying the number of each voucher returned by the value of the voucher subsidy during the financial year (U.S. \$6.20). The sum of fixed and variable costs is divided by the number of vouchers returned; the resulting estimated average cost per voucher equals U.S. \$9.65 (see Table 3). The total voucher-attributable fixed costs stated for this period reflect the actual figure for fixed operational costs provided by MEDA.<sup>66</sup>

### Estimated Cost per Voucher Returned/ITN Distributed

For MEDA's financial year 2010 (from July 1, 2009, to June 30, 2010), MEDA's total fixed costs for the TNVS were U.S. \$3,047,906. During that period, MEDA's voucher-attributable fixed costs were financed by both the GFATM (U.S. \$1,767,858) and USAID/PMI (U.S. \$1,280,048). Total fixed costs were attributed to either the PWV or the IV according to their share of the total (PWV+IV) number of vouchers returned during the period. Variable costs are assumed to be equal to the contracted price per voucher returned by the net manufacturer to MEDA. Division of the total of fixed and variable costs for each type of voucher by the number of vouchers results in an estimated average cost of U.S. \$6.83 per infant voucher and

<sup>64</sup> MEDA's expenditures in a fiscal year include indirect costs and costs of the subcontract for net procurement and distribution.

<sup>65</sup> The difference in the estimated average cost per voucher between the two categories resulted from different proportions of old vs. upgraded vouchers returned in each category. By 2011, the old vouchers were fully retired, i.e., replaced by the upgraded vouchers, and thus the average cost per voucher is the same for the PWV and IV.

<sup>66</sup> MEDA confirmed that no deduction should apply, as the cost reflected the framework required for TNVS operations (Damas Mugashe, personal communication, June 30, 2011).

MEDA's fixed cost budget estimates for the TNVS for fiscal year 2012 (starting July 1, 2011) at U.S. \$2.34 million are equivalent to about 49% of the expenditures for FY2011.<sup>67</sup> Using the same cost definitions and allocation criteria defined for FY2010, three scenarios based on differing assumptions regarding the number of vouchers that might be returned during the coming MEDA fiscal year were used to develop estimates of the average cost per voucher. Assumptions regarding the number of vouchers that might be returned for FY2012 are: i) actual number of vouchers returned to MEDA during the first quarter of CY2011 multiplied by four quarters; ii) number of vouchers returned during FY2010, plus an increase of 2.5%; and iii) the number of vouchers projected in a presentation at the USAID/PMI conference in Dar es Salaam in May 2011. Based on these three assumptions, estimates of the average cost per voucher for FY2012 range from U.S. \$6.94 to U.S. \$7.70 (see Table 3).

**Table 3. Average Cost (U.S. \$) per PWV or IV Redeemed, FY2010, FY2011, est.FY2012**

	July 1, 2009 - June 30, 2010	July 1, 2010 - June 30, 2011	July 1, 2011 - June 30, 2012 (1)	July 1, 2011 - June 30, 2012 (2)	July 1, 2011 - June 30, 2012 (3)
<b>Total voucher-attributable fixed costs (USD)</b>	3,047,906	4,794,064	2,337,410	2,337,410	2,337,410
<b>IV subsidy (USD)</b>	2,480,992	3,892,072	3,481,000	3,953,000	6,490,000
<b>Operational Cost Share (USD)</b>	1,444,420	2,166,443	1,060,825	1,087,545	1,142,734
<i>No. of IV returned</i>	574,582	627,754	590,000	670,000	1,100,000
<b>Costs per IV (USD)</b>	<b>6.83</b>	<b>9.65</b>	<b>7.70</b>	<b>7.52</b>	<b>6.94</b>
<b>PWV subsidy (USD)</b>	3,487,512	4,720,591	4,189,000	4,543,000	6,785,000
<b>Operational Cost Share (USD)</b>	1,603,485	2,627,621	1,276,585	1,249,865	1,194,676
<i>No. of PWV returned</i>	637,857	761,386	710,000	770,000	1,150,000
<b>Costs per PWV (USD)</b>	<b>7.98</b>	<b>9.65</b>	<b>7.70</b>	<b>7.52</b>	<b>6.94</b>

Notes: (1) Estimated based on sales first quarter 2011.

(2) Estimated based on 2010 sales +2.5%.

(3) From Nick Brown presentation at USAID/PMI presentation in May 2011.

Source: Authors' estimates based on voucher returns and financial data from MEDA and N. Brown's projections of FY 2012 levels of voucher returns.

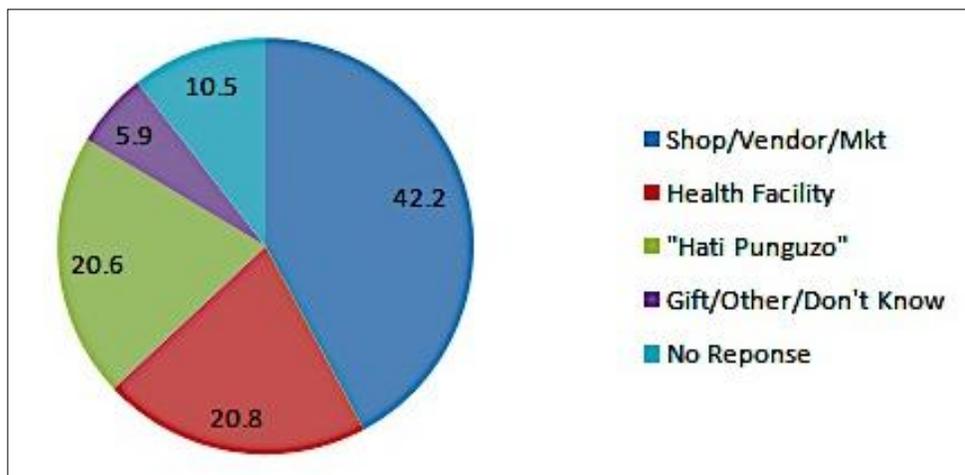
<sup>67</sup> The FY2012 fixed cost budget estimate is based solely on USAID/PMI's existing financial commitment and does not reflect any net additional financing for MEDA fixed costs that may be provided by DFID to support the PWV. Since the GFATM is not making a financial contribution to MEDA's fixed costs, there is no need to apply the 60:40 rule of thumb in allocating MEDA's fixed costs.

## V. CATCH-UP CAMPAIGNS AND KEEP-UP STRATEGIES

### TNVS'S CONTRIBUTION TO ITN OWNERSHIP, PRE-CAMPAIGNS

Given that TNVS targets pregnant women and infants, it would not be reasonable to expect that the TNVS alone would account for all ITN coverage in Tanzania, even pre-mass campaigns. The Tanzanian HIV/AIDS and Malaria Indicator Survey 2007-2008 (THMIS) collected information regarding the source of ever-treated ITNs in households reporting ownership of at least one ITN (51.6%). This survey found that of the households that had at least one ever-treated ITN, 42% of households had purchased their ITN from a shop, vendor, or the market; 21% had acquired their ITN from a health facility; 21% had acquired their ITN with a *hati punguzo* voucher; 6% had acquired their ITN as a gift, from another source, or didn't know the source; and 11% did not provide a response (see Figure 13).<sup>68</sup> Unfortunately, the TDHSs for 2004-2005 and 2010 did not include a question regarding the source of ITNs in survey households, making it impossible to determine the extent to which measured increases in ITN ownership between 2004-2005 and 2007-2008 and between 2007-2008 and 2010 were due to household acquisition of TNVS ITNs. To more accurately assess the on-going contribution of the TNVS to ITN ownership in Tanzania, it will be important for all future TDHS, THMIS, and other malaria/bed nets surveys to include a question on the source through which households have acquired their bed nets.

Figure 13. Source of Bed Nets in Households with at Least One Net, 2007-08, Tanzania (All)



Source: THMIS, 2007-2008.

### CATCH-UP CAMPAIGNS

#### Campaign Design and Implementation

Given that TNVS targets only two vulnerable groups, it is not reasonable to expect that it alone would achieve the goal of universal ITN coverage. Thus, to accelerate progress toward that goal, two catch-up mass ITN distribution campaigns were initiated in Tanzania: U5CC and UCC.

<sup>68</sup> Different estimates of households' sources of bed nets were obtained from a nationally representative survey conducted in 2008 (Marchant et al., February 2009). This study reported that 76% of the total bed nets had been purchased by the household, 2% had been acquired with the PWV or IV respectively, and 6% been received for free; 5% of household respondents did not know how their nets had been acquired.

MEDA capabilities at the national and regional level capacity, established for the TNVS, were put to work during the mass campaigns.

The U5CC distributed 8.7 million LLINs free of cost to households equal to the registered number of children under 5 years. The campaign started in August 2008 in the Tanga region, where U5CC efforts were combined with a measles vaccination campaign.<sup>69</sup> A different design was adopted for nationwide distribution of U5CC nets and rolled out by zone according to local malaria prevalence between May 2009 and May 2010 (see Bonner et al., 2011). The U5CC campaign was funded via the GFATM Round 1 RCC, the World Bank, PMI/USAID, UNICEF, SDC, and GoT.

Sensitization and training for the UCC started in August 2010, with net issuance beginning that October. The goal was to bring LLIN coverage in Tanzania up to at least 80%<sup>70</sup> and promote social and gender equity with respect to ITN access. As with U5CC, UCC's first step was registration at the household level, in this case the number of sleeping spaces<sup>71</sup> without net coverage in each household. Registered households received bar-coded coupons they could exchange for a UCC net, with the number of coupons equivalent to the number of uncovered sleeping spaces. Households were required to bring coupons to a designated LLIN issuing point near their village during the three days that UCC nets were scheduled to be distributed. Based on registration data, it was estimated that 14.6 million nets would be required for the effort. After completion of the first three zones, the estimate of the number of LLINs required was adjusted upward to 18.4 million. The campaign was to be rolled out one zone at a time and completed within eight months. However, as of the date of this evaluation, UCC LLINs had not been distributed in two remaining zones (Coastal and Northern), although completion was expected by the end of September 2011. The bulk of UCC financing came from a GFATM grant. USAID/PMI financed some components of UCC implementation, i.e., part of the logistics management and redistribution of surplus district-level buffer stocks.

### **Impact of Mass Campaigns on the Demand for TNVS Nets**

While the two mass bed net distribution campaigns were deemed necessary to ensure a high level of net coverage in Tanzania, there was a concern that the increased availability of free campaign-distributed nets would reduce the demand for TNVS nets. To examine this possibility, data for five regions with different malaria-related indicators (under-5 malaria prevalence and ITN ownership)<sup>72</sup> and quarterly voucher returns by region divided by projected quarterly births in each region were plotted against the dates for distribution of U5CC/UCC nets (see Figure 14).

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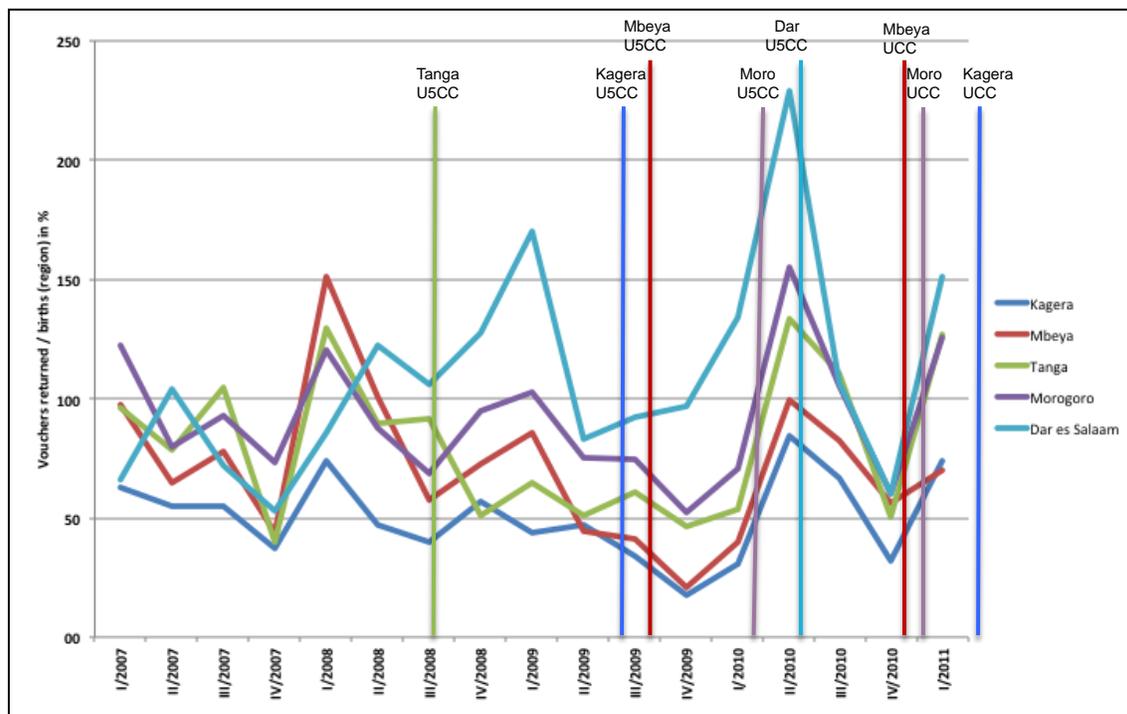
<sup>69</sup> The Tanga U5CC approach (distribution of LLINs during the measles campaign) was hastily designed and implementation had problems. This approach was not adopted for nationwide distribution of U5CC nets. Even so, local health officials interviewed at the district and regional level in Kagera and Tanga believe a well-designed combined distribution effort could be a cost-effective way to distribute nets as part of a keep-up strategy.

<sup>70</sup> According to experts, 80% coverage is needed to dramatically reduce community level *P. falciparum* transmission.

<sup>71</sup> A sleeping space is defined as a sleeping area that can be covered with a single bed net, irrespective of the number of adults and children sleeping in that space.

<sup>72</sup> Under-5 malaria prevalence: Dar es Salaam 1.2%, Kagera 41.1%, Mbeya 3.0%, Morogoro 15.7%, Tanga 13.9%; Under-5 ITN use: Dar es Salaam 62.0%, Kagera 64.6%, Mbeya 42.6%, Morogoro 28.2%, Tanga 52.2% (TDHS 2010).

**Figure 14. (PWVs+IVs Returned)/Annual Births vs. U5CC and UCC Net Distribution Dates, Select Regions, Tanzania**



Source: Authors' calculations based on MEDA data and NBS population projections.

The high top-up amount of TZS 2,000 to TZS 3,000 during 2009 appears to have repressed voucher returns during 2009, with a significant rebound in the first two quarters of 2010 following top-up reduction in late 2009.<sup>73</sup> The data do not clearly indicate a long-term reduction in voucher redemption following the U5CC.<sup>74</sup> While the team found no clear pattern of voucher redemptions post UCC – for example, the increase in voucher returns in Mbeya post UCC was small, whereas in Morogoro it was much larger – this issue deserves careful quantitative analysis after the UCC is completed in all regions.

## KEEP-UP STRATEGY

Tanzania is now considering possible keep-up strategies to maintain the 80% ITN coverage experts consider needed to maintain significantly reduced levels of *P. falciparum* transmission at the community level. A consultant team financed by the Swiss TPH was tasked to consult with Tanzanian stakeholders and develop recommendations on keep-up strategies. Given the team's work—as well as the complexity of designing and selecting among alternative keep-up strategies

<sup>73</sup> The sharp increase in voucher returns in Q1 and Q2 of 2010 suggests that either households had received vouchers but delayed redeeming them until the top-up was lowered to TZS 500 or that household demand increased when the amount was lowered (the latter is supported by the fact that MEDA had a voucher stock-out due to a higher-than-anticipated rate of returns, reflected in the drop off of voucher returns in Q3 of 2010).

<sup>74</sup> The hypothesis that there appears to be no significant long-term reduction in the demand for TNVS nets post campaigns is supported by anecdotal information provided during field visit interviews with clinic staff, retailers and consumers, who indicated that households demanded vouchers even after campaigns – in some cases wanting the TNVS net to enlarge the size of the U5CC or UCC net.

with myriad demographic, epidemiologic, and technical issues related to net efficacy—the evaluation team instead focused on two questions:

- What percent of the total number of nets needed for a successful keep-up program would TNVS be expected to contribute, given the program’s current design and implementation?
- What complementary/alternative strategies should be considered to achieve LLIN replacement for the current TNVS target groups of pregnant women and infants?

### Contribution of the TNVS to Keep-up

Estimating the quantitative contribution of the TNVS in meeting the number of LLINs needed to maintain keep-up after UCC’s end depends on two factors: first, assumptions on the average life of LLINs<sup>75</sup> distributed in the mass campaigns, and second, the number of nets distributed through the TNVS. A set of estimates was developed regarding the gap between TNVS nets and the optimal number of nets required post campaigns. The pessimistic scenario assumes an average net life of three years, with the TNVS distributing nets at levels observed during the first quarter of 2011. The NATNETS scenario assumes a net life of four years but a significantly higher level of nets distributed through the TNVS. The optimistic scenario assumes a net life of five years and a higher level of nets distributed through the TNVS. The pessimistic scenarios estimate a gap ranging from 6.8 to 7.1 million nets; the NATNETS scenario estimates that the gap will range from 3.8 to 3.9 million nets; and the optimistic scenario estimates the gap will decline from 2.8 to 2.5 million nets between 2011 and 2014 (see Table 4).

**Table 4. TNVS’s Potential Contribution to Keep-up for ITN Annual Requirements (in millions)**

		2011	2012	2013	2014
Population*		43.2	44.4	45.7	47.0
Coverage		24.0	24.7	25.4	26.1
Annual replacement	3 yr LLIN life	8.0	8.2	8.5	8.7
	4 yr LLIN life	6.0	6.2	6.3	6.5
	5 yr LLIN life	4.8	4.9	5.1	5.2
TNVS Supply	est. based on 1/2011**	1.2	1.3	1.5	1.6
	NATNETS scenario***	2.0	2.2	2.5	2.7
Gap to be filled	Pessimistic (Note 1)	6.8	6.9	7.0	7.1
	NATNETS scenario (Note 2)	4.0	4.0	3.8	3.8
	Optimistic (Note 3)	2.8	2.7	2.6	2.5

\* National Bureau of Statistics, 2006.

\*\*Assumptions: (i) projected pregnancies @ 4%, (ii) ANC attendance @ 90%, (iii) vouchers issued to 90% of ANC attendees, (iv) voucher redemption rate 75% (plus 5 points p.a.).

\*\*\*Voucher net sales 1/2011: 300,191 (MEDA Quarterly Report and based on USAID/PMI presentation in May 2011).

1/ Pessimistic scenario assumes only a 3 year life and the TNVS supplies only at the level of 1/2011.

2/ NATNETS scenario assumes a 4 year life and that the TNVS supplies a greater number of nets than in 1/2011.

3/ Optimistic scenario assumes a 5 year LLIN life and that the TNVS supplies a higher number of nets than in 1/2011.

<sup>75</sup> LLIN effective life is estimated based on the durability of material and the insecticide release system used. But net life also depends on wear-and-tear under real-life conditions. Thus, some LLINs may be intact after the manufacturer’s guarantee of 5 years, but others may decay or develop large holes and have a shorter life span.

The wide range of estimates of the gap for keep-up nets underscores the importance of assumptions made regarding average LLIN life time and TNVS performance. This range signals the need to empirically study the rate of decay in LLINs used in Tanzania and conduct quantitative analysis to determine the relative contribution of various factors to TNVS performance (e.g., vouchers returned divided by eligible population) to improving the design or management of the TNVS model and guiding development of complementary approaches for reaching target populations. It will also be important to determine what impact, if any, the reduction of regional staff will have on future levels of TNVS voucher returns.

### **Complementary/Alternative Strategies to Reach Target Groups**

The TNVS is currently the only national mechanism providing subsidized LLINs to the especially vulnerable populations of pregnant women and infants. As such, USAID has committed to providing financial support (USAID FY 2011 funding) for a LLIN distribution strategy for the next year.<sup>76</sup> During this period, a NATNETS member or other NGO may wish to finance an analysis of which underlying factors are significantly associated with major variations in PWV, IV, and total voucher coverage rates by region over time (see “Performance” discussion in Section IV). The use of a multivariate statistical approach with existing survey and program data would make it possible to assess the extent to which coverage rate variations are related to factors that are under the control of TNVS implementers – and therefore, which factors could be addressed by strengthening implementation of the existing program as designed – and which factors are primarily due to region-specific factors (e.g., underlying characteristics of the population or health systems access or capacity) that are outside TNVS control. To the extent region-specific factors are determined to be associated with low TNVS coverage rates, adaptations to the TNVS model or pilot tested complementary/alternative strategies should be considered.<sup>77</sup>

Renewed emphasis on the social marketing of ITNs in general, including LLINs distributed by the TNVS, would seem an important part of approaches to improving the cost-effectiveness of the TNVS as well as elements of a keep-up strategy. For example, retailers could be provided materials for displays or other promotions aimed to increase the attractiveness of acquiring a replacement ITN/LLIN at a retail shop. In addition, under Malaria Haikubaliki, mass media and complementary messaging could be developed to promote households’ understanding of options for LLIN acquisition/purchase from retailers. Finally, commercial firms selling ITNs/LLINs at full price should be encouraged to develop ITN/LLIN marketing approaches that would also serve a health/social function, either as an example of corporate social responsibility or via the provision of a small, one-time incentive (i.e., an award for development of the best advertisement). Selection of specific designs for each of the above examples may need to vary by location to maximize the benefits and minimize the costs of reintroducing social marketing approaches in different markets in Tanzania.<sup>78</sup>

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<sup>76</sup> It was unclear at the time of the evaluation if future GFATM grant funds would be available for TNVS support.

<sup>77</sup> In addition, it may be useful as part of development of a keep-up strategy to undertake multivariate analyses using THMIS 200-2008 data to determine the set of household and market characteristics that are most strongly associated individually or jointly with the source where households had purchased their ever-treated ITNs, and in the case of lack of ITN ownership, that are associated with periods lacking mass campaign interventions.

<sup>78</sup> One study in Tanzania (Maxwell, C.A., et al., May 2006) assessed net ownership and retreatment areas in an area where nets were only available through social marketing and an area with free distribution and re-treatment. The study found that a high proportion of the urban population purchased and re-treated nets in the social marketing areas but only a small proportion of the rural population did so. In contrast, in areas with free distribution and re-treatment, a high proportion of the rural population used and re-

Examples of strategies include distribution of ITN vouchers or nets during regularly timing health campaigns (e.g., vaccination or vitamin A distributions) or as part of the activities of existing community-level health workers (e.g., distribution of family planning methods). Tanzania piloted distribution of U5CC LLINs as part of a measles campaign in Tanga in 2008.<sup>79</sup> While there is agreement that this effort was problematic, several PMO-RALG personnel interviewed by the team indicated that the concept remained promising for the Tanzanian context and should be re-piloted after review of the experience and careful re-design and longer period of preparation prior to launch. Co-distribution of ITN vouchers/nets with semi-annual vitamin A campaigns may also be a cost-effective approach to reaching target populations.<sup>80</sup> Co-distribution of vouchers/ITNs with either measles immunization or vitamin A may be especially cost-effective in areas where the TNVS has had low coverage, but where mass campaigns have achieved higher coverage. There are a number of African countries with nationwide experience in co-distribution of ITN vouchers/nets with other health campaigns.<sup>81</sup> The NMCP and members of NATNETS may wish to review publications on these experiences and possibly make site visits to these countries to learn about these co-distribution models and observe any continuing efforts.

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treated their nets. These results suggest that social marketing, particularly for products sold at commercial retail prices, is an approach likely better suited for urban than rural areas.

<sup>79</sup> Tanzania has piloted TNVS modifications, including the equity voucher, whereby eligibility for TNVS nets was extended to people with HIV/AIDS or TB, blind, or disabled, or widowed or very poor. The pilot showed very low uptake. A qualitative study found limited awareness of the equity voucher and eligibility criteria (Mponda et al., October 2007). The equity voucher was replaced by the fixed top-up voucher as a device for addressing inequity.

<sup>80</sup> Development/piloting of co-distribution of LLIN vouchers/nets with a measles or vitamin A campaign would provide insights on the relative benefits/costs of combining with existing campaigns. The measles campaign involves GoT staff and volunteers from health and sectors with funding from the central MoHSW. Vitamin A campaigns rely on MoHSW staff and use district basket funds, with the central MoHSW providing only the vitamin A.

<sup>81</sup> African countries with co-distribution experience include the following: Togo – ITNs with measles and polio immunization and mebendazole in 2004 (Wolkon, et al., November 2010); Niger – LLINs and polio vaccination in 2005 and 2006 (Thwing, et al., June 2008); Senegal - ITN vouchers with mebendazole and vitamin A in 2009 (Thwing, et al., April 2011).

## **VI. DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS**

The following section focuses on discussion, conclusions, and recommendations on how the TNVS may be improved in terms of performance, cost-effectiveness, equity, and sustainability. It will not focus on the role of the TNVS in a larger keep-up strategy for Tanzania for the medium to longer term, as this topic is the subject of a separate study conducted by Swiss TPH consultants.

### **PERFORMANCE**

Since 2007, TNVS national coverage levels have varied by voucher and by year. Further, region-specific coverage levels have varied both within regions and between regions, by year. Current quarterly monitoring reports for the TNVS do not include data or analysis of national or regional coverage levels. National and regional variations may reflect differences in: i) underlying characteristics of the population or geographic areas of residence; ii) TNVS design, implementation, timing, and levels of funding; iii) numbers and geographic distribution of RCH clinics and retailers; or iv) implementation of bed net-related initiatives (e.g., BCC or mass campaigns). To date, no multivariate statistical analysis has been conducted with existing survey and program data to determine which factors are significantly associated with the national and regional variations that have been observed.

Patterns in the quarterly levels of PWV and IV vouchers returned suggest that household demand for bed nets increases during the rainy season. This seasonality has potential for the TNVS's current design (e.g., re-stocking of LLINs at the retailer level) and design innovations (e.g., introduction of an e-voucher with a 60-day validity period).

The evaluation estimates that the TNVS will cover approximately 55% of pregnant women and 40% of infants in 2011. PWV coverage level for 2011 is lower than that achieved in 2007; both PWV and IV 2011 coverage levels are lower than national household coverage levels with ITNs measured by the TDHS 2010. These data suggest there is room for increasing levels of TNVS coverage in the future.

### **Recommendations**

- MEDA's quarterly and annual reports should report on national, regional, and district coverage levels for each voucher and for both vouchers together. MEDA, with input from the NATNETS Steering Committee, should consider adoption of the coverage measure used in this evaluation as compared to the measure it already uses, especially as MEDA's existing coverage measure is flawed in terms of accurate sub-national measurements of coverage.
- MEDA's quarterly and annual reports should provide more in-depth analysis of the qualitative and quantitative data included in the report. For example, its reports could aim to identify reasons for observed increases or decreases in coverage at the national and sub-national levels.
- One or more of NATNETS stakeholders should provide technical and financial support to conduct a study that uses information from available surveys and TNVS program data and takes other net-related activities like BCC efforts and mass campaigns into account. The study would develop and test hypotheses related to the impact of individual and joint significance of demand- and supply-side variables on TNVS observed performance within and

among regions over time. Such an analysis would provide valuable information to inform decision-makers on the need for specific changes in TNVS design to better meet the requirements of specific populations or areas. It would also shed light on possible improvements on current implementation practices for any link within the TNVS voucher cycle and provide data to ground-truth new, complementary strategies for providing ITNs/LLINs to vulnerable groups with specific characteristics in specific areas.<sup>82</sup>

- To reduce implementation factors that may contribute to observed fluctuations in TNVS redemptions/returns:
  - MEDA should more closely monitor and manage voucher stocks at the clinic level and use the data as a tool to reduce the frequency and length of voucher stock-outs.
  - Given that the current practice of re-stocking LLINs at the retailer level against the number of vouchers that retailers have collected may be contributing to stock-outs during periods of high demand,<sup>83</sup> NATNETS stakeholders should explore the feasibility of alternative approaches to reduce net stock-outs – e.g., the net manufacturer could provide retailers with additional TNVS nets on credit, or buffer stocks of TNVS nets could be placed with health facilities or local governments in remote areas.
- The e-voucher pilot effort should evaluate the impact of a limited period of validity (e.g., 60 days) on household decision-making on TNVS voucher redemption timing. Should a significant proportion of households not use their vouchers within the 60-day period,<sup>84</sup> notwithstanding adequate BCC messaging, consideration should be given to the relative benefits/costs of somewhat longer periods of e-voucher validity (e.g., up to 180 days).
- To more accurately assess the on-going contribution of the TNVS to ITN ownership in Tanzania, all future TDHS, THMIS, and other surveys with questions on malaria or bed nets should include a question regarding the source from which households have acquired their bed nets.

## **COSTS AND COST-EFFECTIVENESS**

Analysis in Section IV showed that the average cost per returned voucher is both a function of MEDA’s fixed and variable program costs (including the costs of LLIN manufacture and distribution to retailers) as well as the number of vouchers demanded and returned (see discussion under “Performance”).<sup>85</sup>

Considering fixed costs, it was unclear at the time of the evaluation whether the dramatic decrease in MEDA’s fixed costs starting in July 2011 – which saw MEDA regional staff reduced from 21 regional managers and 8 UCC backstopping teams to 8 field officers – will reduce the

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<sup>82</sup> For example, multivariate statistical analysis could test whether pregnant women at further distances from participating RCH clinics and retailers were significantly less likely to redeem PVVs, suggesting that travel/time costs pose a barrier to net access not currently addressed through the existing TNVS design or network of clinics and retailers. This finding could suggest specific strategic areas to improve performance, e.g., expansion of networks or development of complementary approaches to deliver vouchers/bed nets (see Section V).

<sup>83</sup> The stock-out gap could be especially problematic during the rainy season in remote areas where it would be difficult and costly for A to Z to re-stock retailers.

<sup>84</sup> Aggregated national data on voucher redemptions suggest that a significant number of households redeem their vouchers in the rainy season when the probability of malaria is highest.

<sup>85</sup> The evaluation focused on estimation and analysis of measures of TNVS coverage and the roles of MEDA and the ITN manufacturer/distributor. The team did not examine the role and impact of BCC efforts via mass media, RCH staff, or the community level on the demand for TNVS vouchers and nets or on household use of TNVS nets.

average cost/voucher returned/net distributed.<sup>86</sup> In the past, substantial support was provided by regional managers for voucher distribution to districts, as well as support and mentoring for clinic and retailer staff, with an impact on the availability of TNVS vouchers and bed nets.<sup>87</sup> Only starting next year will there be enough information to begin to assess the impact of MEDA's down-sizing on its operational efficiency and the number of voucher returns.

The factor with the most potential to increase variable costs is the rise in the world price of oil, which affects the cost of the petroleum products used in manufacture of the insecticide, the net polyethylene, and the plastic packaging materials for the nets. In the case of highly subsidized goods, such as TNVS LLINs, substantial long-term increases in input costs could push producers into substituting cheaper production alternatives or pass increased input costs along to donors and the government. There is a potential for reducing the cost per net through economies of scale through higher demand for LLINs or via increased competition from LLIN manufacturers who have newly registered to bid for GoT contracts. Likewise, it is unknown whether cost savings would accrue from adoption of alternative delivery strategies – for instance, distribution of health and other products of interest to TNVS retailers or subcontracting out net distribution to companies that distribute throughout the country.

## Recommendations

- To improve the evidence base for future decision-making on BCC support of TNVS objectives, one or more NATNETS stakeholders should initiate a meta-review of monitoring and evaluation reports and evaluations of the types, frequency, geographic distribution, and impacts of net-related BCC efforts in Tanzania.<sup>88</sup> The results of such a review could, for example, identify the need for better teaching aids at the facility level or the need to re-introduce social marketing related to the benefits of ITN ownership and use – including TNVS nets – and options for acquiring replacement nets at the retail level. To improve analysis of TNVS financial costs compared to other initiatives managed by MEDA:
  - USAID/Tanzania should allocate existing financial resources for conduct of a full financial and operational audit of MEDA.
  - USAID and other prospective donors should require MEDA to develop a unified system of accounts that permits accounting of budgets and expenditures by line item and program effort (possibly to the regional level). MEDA's annual report to NMCP and to NATNETS' members should include information based on program budgets and expenditures.
- While future procurements for TNVS nets should aim for a contract with the lowest cost per net, including distribution costs, this criterion should be balanced by consideration of a manufacturer's willingness to include a contract provision whereby its bid price is guaranteed for a specified period, regardless of any increase in the world price of oil/petroleum products.

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<sup>86</sup> MEDA may re-expand its operations after receipt of DfID's financing for the PWV, which is expected to be in place for 36 months starting in October 2011.

<sup>87</sup> Notwithstanding the program's achievements, the team observed during field visits that the TNVS does not always operate according to its design; the team also observed that the capacity of some local implementers is under-developed. In addition, health officials and regional staff expressed concern during field interviews that TNVS implementation will suffer due to the elimination of MEDA's regional field staff.

<sup>88</sup> This meta-analysis review might include a literature review on the impact of BCC efforts on bed net ownership and use in other African countries.

- The NMCP and NATNETS should consider the technical and financial feasibility of extending eligibility for TNVS vouchers and bed nets to PLWHA.<sup>89, 90</sup> Extension of TNVS eligibility to this group would require little change to the existing model, as PLWHA already use health facilities for diagnostic testing and anti-retroviral treatments, thereby minimizing or eliminating any impact on TNVS recurrent fixed costs. Extension of TNVS eligibility would require additional financing for investment costs (e.g., for activities like initial sensitization of the target group regarding eligibility as well as any needed training of health staff at the regional, district, facility, and retailer levels) and for recurrent variable costs for net manufacture/distribution.
- TNVS implementing partners should aim to reduce TNVS voucher and ITN stock-outs:
  - Reducing voucher and net stock-outs should be one of the objectives of the e-voucher pilot, and, as such, e-voucher evaluation should measure any impact on voucher/ITN stock-outs.
  - Consideration should be given to introduction of a balanced scorecard<sup>91</sup> or development of performance-based financing that would provide incentives to MEDA and the net manufacturer to reduce stock-outs of vouchers and ITNs.
- In light of this evaluation's findings on the considerable variability in TNVS coverage by region, NMCP and NATNETS stakeholders should consider providing MEDA with technical assistance and financing to ensure a thorough assessment of the impact of reducing the number of regional supervisors on TNVS performance.

## EQUITY<sup>92</sup>

Regarding *equity in service delivery*, the TNVS has a high degree of horizontal equity in that all individuals in the identified vulnerable groups are eligible to receive a voucher upon use of a relevant health service. However, the TNVS could improve achievement of vertical equity if the eligible groups were able to obtain LLINs in a size and shape that better addresses their circumstances and protect them from mosquito bites.<sup>93</sup> With regard to *equity in financing*, the TNVS has a high degree of horizontal equity in that the top-up amount paid with the PWV or IV

<sup>89</sup> An important reason for adding PLWHA as an eligible group is that an episode of malaria, through stimulation of the immune system, will temporarily increase viral load and potentially the rate of progression of HIV to AIDS.

<sup>90</sup> The STPHI Keep-Up Strategy consultant team also examined the possibility of expanding eligibility for TNVS nets to households with students registering for levels 1, 4, and 7.

<sup>91</sup> The balanced scorecard is designed based on a detailed understanding of linkages between type and levels of inputs (human and physical), processes, and achievement of program objectives (i.e., outcomes). It usually includes both financial and non-financial measures and highlights comparison with pre-determined target values. Compared to more detailed management and financial reports, it focuses senior managers on inputs and processes needing improvement to achieve objectives.  
[http://en.wikipedia.org/wiki/Balanced\\_scorecard](http://en.wikipedia.org/wiki/Balanced_scorecard), accessed 08/18/2011.

<sup>92</sup> Equity can be considered both in terms of *service delivery* and *service financing*; equity also has horizontal and vertical dimensions. *Horizontal equity* is concerned with whether individuals at the same level of vulnerability benefit to the same degree from a program (service delivery) or if those who receive the same service pay the same amount (service financing). *Vertical equity* considers whether individuals with different levels of vulnerability receive adequate benefits (services delivery), or if any financial contribution made adequately reflects the ability to pay. This section considers TNVS equity in terms of the coverage of vouchers returned, e.g., LLINs obtained.

<sup>93</sup> For instance, urban households or those with many children often have large sleeping areas and require big nets; also, family members may sleep on the floor and benefit from a net with a conical rather than a rectangular shape.

for the identical LLIN (benefit) is the same, at TZS 500.<sup>94</sup> The TNVS does not achieve vertical equity in that top-up levels do not depend on household ability to pay. That said, achieving vertical equity would likely be difficult and costly, as it may require introduction of means testing to determine the top-up level, an approach that is hard to implement.

## Recommendations

- To improve the vertical equity of the TNVS, USAID/Tanzania or other NATNETS stakeholder should finance the design and pilot testing of an effort to do the following:
  - Introduce some degree of choice in the size and shape of the net<sup>95</sup> (equity in service delivery)
  - Assess the introduction of varying top-up levels for TNVS nets, perhaps associated with the choice of larger nets, based on household demographic and socio-economic characteristics (equity in financing)

## SUSTAINABILITY

Starting in the late 1990s, Tanzania and its development partners started work to develop a PPP-based social-marketing model to increase ownership and use of ITNs in Tanzania. The original objectives of these efforts were to increase awareness of ITNs, appreciation for the health benefits of ITN ownership and use, and willingness to pay all or a part of the cost of ITNs. The TNVS was designed in 2002 and launched in 2004, with the objective of targeting distribution of subsidized ITNs to vulnerable groups. The TNVS expanded to cover all regions by 2006 and has continued to adopt approaches appropriate to reaching remote areas.

TNVS achievements are not limited to the effective provision of vouchers to vulnerable groups. This public-private partnership has developed management skills and systems at MEDA allowing the TNVS platform to be used to support two mass catch-up campaigns, with minimal increases in overall fixed costs. Further, the TNVS has created an interdependent network of actors in which the livelihoods of a significant number of partners, i.e., many retailers, depend to a significant degree on the mechanism. The empowerment of small-scale enterprises has formed part of the strategy. Finally, the TNVS provides a significant number of jobs for Tanzanians, especially women, at an LLIN manufacturer based in Arusha.

Despite areas in which TNVS design and implementation could be improved, as documented in this report, abrupt abandonment of the voucher scheme would deprive Tanzanians of an effective mechanism for obtaining subsidized LLINs nets. This would have a particular impact on targeted vulnerable groups and would potentially affect the livelihoods of a large number of small retailers.

Due to the targeting of TNVS benefits to specific groups, other keep-up strategies will have to be developed and introduced to maintain ITN coverage between 80 and 85% of all sleeping areas. A separate study of the likely future benefits and costs of keep-up alternatives was submitted by the Swiss TPH-sponsored team at the end of July 2011.<sup>96</sup>

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<sup>94</sup> Horizontal equity in financing is not achieved to the extent that eligibles may have to pay different amounts for transport to clinics/retailers or different opportunity costs traveling to/from or waiting at a clinic. Opportunity costs vary for women employed outside vs. within households and among women caring for many family members.

<sup>95</sup> For example, the pilot effort could offer both small (4 x 6 x 7 foot) and larger (5 x 6 x 7) rectangular nets as well as conical nets.

<sup>96</sup> GFATM or other financing will be needed for any new strategy or addition to the existing keep-up strategy.

## Recommendations

- Given TNVS effectiveness, the potential to better understand and improve TNVS performance, and absence of other established mechanism and organization with the experience to provide LLINs to the target populations on a wide-scale basis in the Tanzania context, USAID/Tanzania and other donors should aim to secure financing for continuing it for at least the next two to three years.
- Given the TNVS' contribution to building small businesses and employment, especially for women, MEDA and other partners such as PSI should explore options to further strengthen the business skills and financial sustainability of participating retailers. Options might include improvement of retailer training efforts/materials and the provision of microfinance.
- The NMCP may wish to pilot test complementary/alternative approaches for distribution of LLINs to the current target groups. One alternative to consider would be co-distribution of ITN vouchers and nets with existing health campaigns (e.g., measles vaccination or vitamin A). NATNETS stakeholders could provide technical and financial assistance for a review of the literature on experiences with co-distribution approaches in other African countries, possibly with site visits to these countries for NMCP decision-makers.
- NMCP and NATNETS efforts to develop longer-term sustainable strategies for future procurement and distribution of LLINs to achieve their ITN coverage objective of at least 80% of the Tanzanian population should include: i) estimate of the type and amounts of additional managerial and financial support the GoT could provide; ii) identification of likely types and levels of donor support;<sup>97</sup> and iii) exploration of the potential to obtain significant levels of material/financial support from non-traditional sources.<sup>98</sup>

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<sup>97</sup> In the past, the essential function of estimating, soliciting, and tracking donor funding types and levels for the TNVS and mass campaigns was carried out by the team leader of the ITN Cell (STPHI full-time consultant). Future ITN Cell staffing should ensure continuation of one or more staff to continue these functions.

<sup>98</sup> One non-conventional option may be via “corporate social responsibility.” Examples of “corporate social responsibility” that have involved substantial corporate inputs and long-term commitment include Merck’s provision of Mectizan to support the program to eliminate river blindness, see <<http://www.merck.com/responsibility/access/access-feature-mectizan.html>>, accessed on August 18, 2011.

# ANNEX A. SCOPE OF WORK

## TANZANIA: NATIONAL VOUCHER SCHEME EVALUATION

### Purpose

The purpose of this evaluation is to assess the financial and programmatic performance of the Tanzania National Voucher Scheme (TNVS) and provide recommendations for its future direction. The evaluation team will assess the performance of the TNVS following recent national policy shifts such as universal coverage campaigns (UCC); they will measure trends in insecticide-treated bed-net (ITN) demand from consumers and retailers; examine the TNVS operational infrastructure and cost structure; and determine its viability as a future keep-up mechanism in the wake of the UCC.

### Background

The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS and tuberculosis. PMI was launched in June 2005 as a five-year, \$1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions, and reduce malaria-related mortality by 50% in 15 high-burden, sub-Saharan countries. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through FY 2014. Programming of PMI activities follows the core principles of the Global Health Initiative: encouraging country ownership and investing in country-led plans and health systems; increasing impact and efficiency through strategic coordination and programmatic integration; strengthening and leveraging key partnerships, multilateral organizations, and private contributions; implementing a woman- and girl-centered approach; improving monitoring and evaluation; and, promoting research and innovation.

In June 2005, the United States Government (USG) selected the United Republic of Tanzania (including the Mainland<sup>99</sup> and Zanzibar) as one of the first of three countries to be included in PMI. Malaria is a major public health problem in Tanzania. Nearly all 41 million residents on the Mainland and all 1.2 million persons in Zanzibar are at risk of malaria. Annual malaria deaths in Tanzania are estimated to be 60,000, with 80% of these deaths among children under-five years of age. Approximately 16-18 million clinical malaria cases are reported annually by public health services and more than 40% of all outpatient attendances are attributed to malaria.

The TNVS began in November 2004 with support from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) to provide vouchers for bundled insecticide-treated bed nets (ITNs) on the Mainland to pregnant women. Beginning in October 2006, PMI supported the expansion of the Voucher Scheme to infants, and has been supporting the TNVS strategy since. Despite high redemption rates and demand for nets under the TNVS the 2007–08 Malaria Indicator Survey demonstrated that only 26% of pregnant women and 25% of children under five were sleeping under ITNs. Additional data from TNVS household surveys demonstrated challenges in equity, access, and coverage for children under-one.

These findings led to important policy shifts in 2007 and 2008. The Ministry of Health and Social Welfare, following extensive consultations, agreed on the following: (1) the TNVS will gradually move toward long-lasting insecticidal bed nets (LLINs) following funding commitments from GFATM (Round I Rolling Continuation Channel in 2007) and PMI; (2) the voucher top-up value would be reduced to Ts 500 (\$0.45 at the time, but now worth \$0.30 with the latest exchange

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<sup>99</sup> Official Government of Tanzania documents and all DHS and MIS documents capitalize the "M" in Mainland.

rate) to enable more families to afford a LLIN; (3) a national under-five *catch-up* campaign to distribute free LLINs to all children under five years of age; and, (4) a national “universal coverage campaign” to distribute LLINs to all sleeping spaces, covering the entire population.

Additional improvements were made, including: improving the appearance of the net to a more attractive and unique blue-and-white striped net; expanding the network of targeted retailers from 6,000 to 12,000, with the additional retailers located in more remote areas; and, changing the retailer delivery system from the retailer picking up the nets from the local manufacture to the manufacturer delivering the nets to the retailers.

The Ministry of Health and Social Welfare was able to secure funding from PMI, World Bank, GFATM, and several other donors to execute these new policy changes. At the present time, the under-five campaign has been completed and the universal coverage campaign is underway on a rolling basis. The changes to the TNVS (shift to LLINs and caps on the top-up fee) have also been rolled out throughout the Mainland.

PMI has been funding the Mennonite Economic Development Association (MEDA) since 2006 to implement the TNVS. Other partners including World Vision, PSI, and Johns Hopkins University have received funding for implementing various aspects of the TNVS. GFATM has also been contributing funding to the TNVS first through the Round 1 grant, and now the Rolling Continuation Channel. In a new climate of free LLIN distribution, it unclear how the market will react or retailers will react to the new top-up.

Further information on funding levels and implementing partners are detailed in the Tanzania Malaria Operational Plans on [www.pmi.gov](http://www.pmi.gov).

## **Objectives**

PMI has been providing funding for the TNVS since 2006. The future funding situation for the TNVS is uncertain as the RI RCC GFATM grant runs out July 31, 2011. The future of the TNVS in the wake of the Under-Five (U5CC) and Universal Coverage Campaigns (UCC) is also unclear. Currently, the TNVS is operating through a network of nearly 7,000 retailers and wholesalers operating throughout the Mainland; these retailers accept vouchers and top-up payment in exchange for nets. These retailers may lose their bed-net business after the UCC, and may be reluctant to stock expensive LLINs until the need and demand for new nets recovers. It is unclear how the TNVS is currently performing following the U5CC and now the UCC.

In addition to the questions on performance, the TNVS has required creation of major infrastructure and has significant fixed, operational costs. Questions have been raised regarding the ongoing, fixed cost structure of the TNVS and whether this system is the most cost effective to maintain, particularly if demand remains depressed for some time.

Notwithstanding these questions on the viability of TNVS, there is a need to identify a viable and sustainable keep-up mechanism to replace worn-out ITNs and cover newly-pregnant women and infants. At a minimum, 3.2 million nets are needed each year to cover new pregnancies and births. Currently, only the TNVS has the infrastructure in place to function as a keep-up mechanism throughout the Mainland.

This PMI evaluation is intended to evaluate the recent performance of the TNVS after the UCC, trends in demand from consumers and retailers, operational infrastructure and cost structure, and viability of the current mechanism as a future keep-up mechanism in the wake of the UCC.

The evaluation team will be expected to understand the evolution of the project, situational context, and views of key stakeholders working in malaria in Tanzania. In addition, the evaluation

team will be expected to pursue two different work streams—financial and program performance. Based on this analysis, the evaluation team is expected to answer the following high-level questions:

- Based on performance and trends in ITN demand following the UCC, to what extent can the TNVS mechanism ensure that high LLIN coverage for vulnerable populations will be sustained over the next 3-to-5 years? What proportion of vulnerable groups can the TNVS expect to cover?
- Is the TNVS a cost-effective mechanism for net distribution?
- Are there specific management, operational, or implementation changes that would improve the performance of, demand for, and cost effectiveness of the TNVS?
- Are the assumptions behind the TNVS when it was established in 2004 still viable, given the change of the ITN strategy from a targeted, public-private partnership to universal free net distribution to all age groups?
- Is the TNVS an effective strategy for replacement of nets following the two free mass net distributions in Mainland Tanzania? What are potential alternatives?

### **Illustrative Questions**

The evaluation team is expected to pursue two separate, but related work streams to meet the objectives. Key illustrative questions are listed below.

#### **Analysis of the Current and Future Performance of TNVS**

- What is the annual keep-up need for new cohorts of pregnant women and infants?
- Conduct an analysis of the redemption rates prior to the U5CC; post the U5CC with implementation changes; and post UCC in areas where it has been rolled out. The analysis should include current redemption rates and future trends, particularly following the UCC.
- What percentage of the keep-up need is being reached with TNVS, particularly after the UCC? Is this anticipated to improve? What should the acceptable performance thresholds for key indicators (redemptions, number of nets, and number of retailers) be?
- What is the anticipated demand for TNVS vouchers from the perspective of the community and the retailers in the regions where UCC has been completed? How is this expected to change?
- What are the key determinants of demand post-UCC?
- What are the key implementation challenges since the new TNVS strategy rolled out?
- What is the currently number of LLINs reaching beneficiaries?
- What proportion of the target population is currently reaching nets via TNVS?
- What other sub-groups could be served by the vouchers e.g. school children?

#### **Cost/Financial Analysis of the TNVS**

- Analyze the operational costs of TNVS. What are the fixed costs and the variable costs of the mechanisms? What are the major cost components of the fixed operational costs e.g. salary, infrastructure? Are certain regions/operational centers more costly than others? The evaluation consultants should be informed that MEDA currently has 28 field teams in place. MEDA intends to cut 15 field teams in June 2011, after the UCC has ended. When the

electronic voucher<sup>100</sup> comes online (tentatively in September 2011), it will further cut the need for field teams and visits, as the electronic system associated with the new voucher will provide electronic oversight, which will allow MEDA to dispatch small M&E teams to make field visits—only when needed—in the case of irregularities.

- Given the current redemption rates and the fixed operational cost structure, what is the total cost per net distributed? How does the cost per net change based on redemption rates?
- Analyze the variable costs of the TNVS. What are the cost of the procured nets, distribution, and voucher collection under TNVS? Are there other variable costs? Does the TNVS have the potential to reach an accepted number/percentage of targeted individuals if we simply increase the amount of money going to commodities? The last (and still open) contract MEDA has with *A to Z Textiles* had MEDA paying *A to Z* \$6.20 per net for manufacture, distribution, and redeemed voucher collection; a new contract signed between MEDA and *A to Z Textiles* in March 2011 will allow for this to be done for \$5.90 per net; at this point in time, the only money MEDA has for this is from “gift funds” provided by the Netherlands Government via USAID’s cooperative agreement with MEDA.
- What would it cost for MEDA to include private health facilities and is that needed to extend reach?
- What are the opportunities to streamline the operations and costs?
- What are the future funding commitments for TNVS from various donors and what are the funding gaps?
- Is TZSs 500 the most appropriate fee for sustaining the TNVS? Could it be increased without decreasing demand?

### **Conclusions and Recommendations**

- Given the financial and performance evaluation, what are the main conclusions of the evaluation team? To what extent is the TNVS a cost-effective and successful ITN distribution that can be expected to maintain high levels of coverage for vulnerable groups over the next 3-5 years?
- Are there specific management, operational or implementation changes that would improve the performance, demand and/or cost effectiveness of the TNVS?

### **Methodology**

The consultants will report to PMI/Tanzania staff and provide frequent updates on their progress. The consultants are expected to propose the final methodology and implement the following activities:

- Review background documents and reports provided by USAID/Tanzania.
- Conduct a two-day team planning meeting (TPM) upon arrival in-country. During the TPM, the evaluation team will review and discuss the SOW; develop the work plan and final methodology; define team members’ roles and responsibilities; and assign report writing responsibilities. The outcome of the meeting will be shared with USAID/Tanzania, and the PMI/Tanzania team will participate in some of the TPM sessions meetings, as appropriate.

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<sup>100</sup> MEDA intends to introduce an electronic voucher that will be good for 60 days. Activation of the voucher will be done by health facility staff via cell phone, and stored on a server. Within 60 days, upon presentation at a retail outlet, the retailer will send a cell phone message to say the voucher has been redeemed. If it were beyond the 60 days, that voucher would be voided, freeing up the “liability” MEDA sets aside for the cost of an LLIN that would match said voucher.

- Conduct interviews with key stakeholders at PMI/Tanzania, USAID/Tanzania, National Malaria Control Program, MEDA, and Global Fund.
- Review and analyze key metrics, including voucher distribution and redemption data (available from MEDA).
- Perform an extensive financial analysis based on existing financial reports and data available from MEDA. This is not an audit so consultants are not expected to analyze receipts, bank statements, etc. The consultants are expected to work with existing financial reports to analyze cost drivers.
- Carry out field visits to communities, which were recent recipients of the UCC to assess the demand for TNVS following the UCC. The consultants are expected to conduct interviews and focus groups with select retailers, communities, and clinics.

## **Deliverables**

### **Work plan, Methodology, and Status Reports**

The Team Leader will submit the work plan and methodology to USAID/Tanzania and GH Tech after the TPM. The work plan and methodology will demonstrate how the team will evaluate the financial and programmatic components of the TNVS. It will include the finalized evaluation questions; interview instruments; costing tools; plans for analysis; implementation schedule; and draft report outline. USAID/Tanzania will then review the proposed work plan/methodology and submit comments to the Team Leader. The evaluation team will revise the work plan/methodology and send the final version to USAID/Tanzania and GH Tech. The work plan and methodology must be finalized and approved prior to the initiation of the interviews and site visits.

### **Status Reports and Interim Briefings**

The Team Leader will provide bi-weekly status reports on work plan implementation to USAID/Tanzania and GH Tech. The evaluation team will also conduct at least two interim briefings with the PMI/Tanzania team while in-country to review the progress and methodology of the evaluation.

### **Presentation of Findings**

The assessment team will present the draft report findings and recommendations to PMI/Tanzania staff and MEDA and NMCP on a date to be agreed upon with USAID. The power point presentations will be shared with GH Tech prior to the USAID and stakeholder debriefings.

### **Draft Survey Report**

The Team Leader will submit the first draft report to USAID/Tanzania and GH Tech at the end of the evaluation team's visit. This draft report will include findings, conclusions/lessons learned, and recommendations for review and comment by USAID, MEDA, and NMCO. All work products including interview notes, financial analysis, field notes, should be made available to USAID upon request. The Mission will provide consolidated, written comments to the evaluation team and GH Tech within 10 working days of receiving the draft report.

### **Final Survey Report**

The Team Leader will submit the final unedited report to USAID/Tanzania and GH Tech within 10 working days after the team receives consolidated comments from USAID/Tanzania. GH Tech will provide the edited and formatted final document approximately 30 days after USAID provides final approval of the content. USAID/Tanzania requests both an electronic version of the final report (Microsoft Word 2003 format). Procurement sensitive information will be removed from the final report and incorporated into an internal USAID Memo. The remaining

report will then be released as a public document on the USAID Development Experience Clearinghouse (DEC) (<http://dec.usaid.gov>) and the GH Tech project website ([www.ghtechproject.com](http://www.ghtechproject.com)).

## **ANNEX B. PERSONS CONTACTED**

### **TANZANIA**

#### **Ministry of Health and Social Welfare, United Republic of Tanzania**

Dr. Donan W. Mmbando, Director, Preventive Services  
Dr. Renata Mandike, National Malaria Control Program

#### **A to Z Textile Mills Limited**

Binesh Haria, Chief Operating Officer and Director of Production  
Christopher Machua

#### **Centers for Disease Control and Prevention**

Peter D. McElroy, Ph.D., MPH, Epidemiologist, PMI Resident Advisor

#### **Embassy of the Kingdom of the Netherlands**

Rik Peeperkorn, MD, MPH, First Secretary Health and HIV/AIDS

#### **Ifakara Health Institute**

Honorati Masanja, Ph.D., Chief Research Scientist  
Rose Nathan, Ph.D., Director of Training

#### **JohAchelis and Sohne GmbH**

Thomas Brinken, Director, Healthcare and Scientific, representing NETPROTECT

#### **Johns Hopkins Bloomberg School of Public Health, Center for Communications Programs**

Robert Ainslie, Chief of Party, COMMIT  
Robert Karam, Chief of Party, Tanzania Capacity and Communication Project (TCCP)  
Hannah Koenker, MPH, Senior Program Officer, Global Program on Malaria  
Waziri Nyoni, BCC Program Manager

#### **Johns Hopkins University – JHPIEGO**

Esther Mathias Dalali, Nurse Midwife Advisor  
Gaudiosa Tibaijuka, Med, RM, RN, Senior Technical Manager

#### **John Snow, Inc.**

Ousmane Dia, Chief of Party, DELIVER Project  
Deogratus Kimera, BPharm, MPH/HE, Country Director, SCMS/Tanzania  
Josephine Nyonyi Mahamba, Senior Public Health Logistics Advisor, DELIVER Project  
Ssanyu Nyinondi, BPharm, MPH, Deputy Country Director, PHPGC, SCMS/Tanzania

#### **Mennonite Economic Development Association (MEDA)**

Faith Patrick, Country Manager  
Daniel Albrecht, Tead Lead, Business Development

Ricki Justice Bezuidenhout, Deputy Operations Manager  
Ann Gordon, Senior Consultant/Product Manager, Production and Marketing Linkages  
(Waterloo)  
Damas Mugashe, Finance Manager/Controller  
Brian Grant, former Deputy Country Manager

### **PricewaterhouseCoopers (PwC)/Tanzania**

Gloria Roman, Senior Manager, GFATM Agent

### **PSI/Tanzania**

Romanus Mtung'e, Executive Director, Tanzania Social Marketing Program (TSMP)

### **Swiss Development Cooperation**

Jacques Mader, Deputy Director of Cooperation – Health  
Dr. Elizeus Kahigwa, Health Advisor

### **Swiss Tropical and Public Health Institute**

Nick Brown, Team Leader, ITN Cell, National Malaria Control Program  
Christian Lengeler, Ph.D., Project Leader, Department of Public Health and Epidemiology

### **Tanzanian Red Cross**

Kheri Issa Ngwere, Program Officer

### **Tulane University School of Public Health and Tropical Medicine**

Joshua Yukich, Ph.D., Research Assistant Professor  
Department of International Health and Development

### **U.S. Agency for International Development**

Andrew Rebold, MPH, Deputy Health Team Leader  
Keith Hummel, Commodities and Logistics Advisor  
Jessica Kafuko, MD, PMI Resident Advisor  
Naomi Kaspar, MBA, PMI Project Management Specialist

### **Vector Health International Ltd.**

Dr. Pierre F. Guillet, Field Development Specialist (consultant to A to Z Textile Mills Limited)

### **World Bank**

Dominic Haazen, Lead Health Policy Specialist, Health, Nutrition and Population Sector

### **World Health Organization**

Ritha J.A. Njau, National Professional Officer, Malaria

## **World Vision/Tanzania**

Greyson Chagama, Team Leader, Grants and Relief Division  
Anatoli Rugaimukamu, Program Development Officer  
Chrisostom Sarapion, Senior Program Finance Officer, Grants and Relief Division

## **KAGERA REGION, FIELD TRIP**

### **Regional Health**

Dr. Alex Mwita, Regional Medical Officer  
Helman Kabiliji, Regional Medical Officer  
Dorosella Njunwa, Regional Health Secretary  
Ahmed Rubwa, Regional Malaria Focal Person

### **Kagera Regional Hospital, Bukoba**

Hospital Secretary  
Mothers (2), Obstetrics Wards  
Medical and Nursing Staff (3), Mothers (2), Pediatrics Ward

### **Bukoba City**

TNVS Retailer (1)

### **Misanyi District**

District Medical Staff (Acting DMO, DHS, DMFP, DRCH Coordinator)  
Bunazi Health Center RCH Staff (5)  
TNVS Retailers (2)

### **Muleba District**

DMO Staff (DMO, DMFP, DRCH Coordinator)  
Buganguzi Dispensary (Clinical Officer in Charge)  
Retailer (1)  
Households (3)

## **TANGA REGION, FIELD TRIP**

### **Regional Health**

Dr. Ally Uledi, Regional Medical Officer  
Dr. Kanyinyi, Acting Regional Health Officer  
Dr. Olga Jeremiah, Acting Regional Malaria Focal Person

### **Bombo Regional Hospital**

Hospital Secretary  
Obstetrics Ward, 4 mothers  
Pediatrics Ward, 3 mothers

**Muheza District**

DMO Staff (DMO, DMFP/DRCH Coordinator)  
Bulwa Heath Center Staff (Clinical Officer in Charge)  
TNVS Retailers (2)

**Pangani District**

Pangani District Hospital (Acting DMO, DMFP/DRCH Coordinator)  
Mwera Health Center (Assistant Medical Officer, Nursing Officer)  
Stahabu Dispensary (Clinical Officer in Charge, Nurses (2))  
TNVS Retailers (2)  
Households (2)

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