districts (out of 126) of the country and will affect one way or another 100 percent of the population. Additionally, 20 districts, which represent about 25 percent of the population, are prone to malaria epidemics every four to five years. Approximately 95 percent of cases of malaria are produced by *Plasmodium falciparum.* Estimates for overall number of cases of malaria are between 14 – 19 million cases per year. Malaria affects all socio-economic strata but it concentrates mainly among the poor and children under five. It seriously affects pregnant women. Malaria peaks during the "short rains" (November-December) and "long rains" (March – June) and declines during the dry season (July – October).

A third or more of all out patient department (OPD) visits and hospital admissions are attributed to malaria.[2] In year 2000, there were 1,661,533 OPD consultations for malaria for children under five—almost 39 percent of total consults for children under five. Additionally, almost 55 percent of hospital admissions in children under five were due to complicated malaria. Overall (all ages) there are 100,000 – 125,000 deaths per year from malaria, of which 80 thousand occur in children under five—that is 65 – 80 percent of all malaria deaths and 36 percent of all under five deaths. Nationally, it is estimated that a Tanzanian child under five years of age will have .7 cases of malaria per year.[3]

Malaria is also a significant burden to pregnant women in Tanzania. It has been estimated that there are approximately 1.7 million cases of malaria in pregnant women and up to 20 percent of deaths among pregnant women can be attributed to malaria. Also, a significant proportion of anemia during pregnancy is related to malaria.

Below are the main roll back malaria indicators monitored by the National Malaria Control Programme in mainland and the Zanzibar Malaria Control Programme.

Table 1: Roll Back Malaria Core Indicators

#	Indicators	NMCP		ZMCP	
		2001	2003	2002	2005
1	Crude death rate (under five)	184 /1000			
2	Mortality attributed to malaria (all ages)	31	32	50	36
3	Mortality attributed to malaria (under five)	38	41	47	47
4	Mortality attributed to malaria (5 and above)	23	10	62	25
5	Morbidity attributed to malaria (all ages)	42	40	48	22
6	Morbidity attributed to malaria (under five)	46	43	54	26
7	Morbidity attributed to malaria (5 and above)	41	38	44	20
8	Case fatality rate (under five)	2.8	3.2	2.8	2.5
9	Case fatality rate (five and above)	3.5	3.1	2.7	2.3
10	% of under fives with fever getting appropriate treatment within 24 hours of onset	11	27	6	10
11	% of fever/uncomplicated malaria under five cases correctly managed at health facilities	51	64	41	73

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

President's Malaria Initiative
Malaria Country
FY 2006

ACTIVITY	2005	2006											
	OCT-DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Expansion of TNVS to infants													
Negotiations with partners													
Prioritize districts													
Adoption of TNVS materials													
Training of vendors and promotion													
Subsidies to vendors													
Implementation													
Mass Retreatment to make LLINs													
Safety Net Program													
Decide on mechanisms													
Negotiate with partners													
Develop protocols and materials													
Selection of districts and compilation of lists													
Dissemination of new vouchers													
Baseline													
Implementation period													
Monitoring and Supervision													
LLIN Technology Transfer													
Meet with interested parties													
Conduct needs assessment													
Meet with net manufacturers													
Define specs and steps for purchasing equipment													
Procure and installation of new equipment													
Initiate production by equipped factories													
Zanzibar LLINs Jump Start													
ZMCP and PSI meeting													
Official Launch													
ACTIVITY Continued	2005	2006											
	OCT-DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Preparation for Jump Start and Mass Media													

Continued IEC support													
Distribution of LLINs													
Indoor Residual Spraying in Zanzibar													
Environmental Assessment TNZ and ZNZ													
Order commodities													
Training of IRS teams													
IRS Conducted													
Entomological Data Collection													
Entomological Monitoring													
Environmental Assessment TNZ and ZNZ													
Order commodities													
Training of IRS teams													
IRS Conducted													
Entomological Data Collection													
Malaria Diagnosis and Treatment													
Introduction of RDTs													
Monitoring and supervision													
Selection and procurement of RDTs													
Selection of Districts for RDT													
Adaptation of training materials													
Training of trainers													
Health Worker training													
Deployment of RDTs													
Evaluation													
Provide subsidized ACTs to ADDOs													
Determine shortfall in Training resources													
Prepare grant to NGO													
Award grant													
Health Worker Training													
Follow Up													
Improved Management of Severe Malaria													
Contract NGO to do training													

ACTIVITY Continued	2005	2006											
	OCT-DEC	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Selection of districts													
Prepare training materials													
Training in districts													
Training of trainers													

Monitoring and supervision													
Strengthen Medical Stores													
Assessment of MSD													
TA Visist													

Annex 2

Monitoring and evaluation plan for Tanzania

President's Malaria Initiative Countries – Routine Monitoring Plan

Example Indicators	Frequency of Measurement	Source of Data	Cost to PMI
Insecticide-treated materials:			
No. of ITNs purchased/distributed by route of distribution (ANCs, campaigns, commercial sales, etc.)	Quarterly	Routine reports from all partners	0
Case Management:			
No. of municipalities where ACT has been implemented	Quarterly	NMCP reports	0
No. of ACT treatments administered (by age group)	Every 6 months	NMCP/NGOs	0
No. of health facilities offering laboratory diagnosis of malaria (microscopy/RDTs)	Quarterly	Reports from MoH, NGOs/FBOs, and others	0
Drug efficacy/ drug resistance monitoring	Yearly/ Bi-yearly	Specialized in vivo/ in vitro evaluations	*
Insecticide resistance monitoring	Continuous	Specialized bioassays of field-collected mosquitoes	*
Drug safety monitoring	Continuous	Sentinel-site system of passive reporting and case follow-up	*
Drug quality monitoring	Continuous	National Drug Regulatory Authority	*
Intermittent Protective Treatment:			
No. of municipalities where IPTp with SP** has been implemented	Quarterly	NMCP reports	0
No. of SP treatments administered	Quarterly	NMCP/MoH reports	0
% of women delivering at health facilities who have received IPT1 and IPT2	Quarterly	NMCP/MoH reports	0
Epidemic Preparedness and Response:			
No. of municipalities with epidemic-prone areas that have a written epidemic response plan	Every 6 months	NMCP reports	0
No. of municipalities with epidemic-prone areas that have a functional monitoring system in place (e.g., monitoring charts)	Every 6 months	NMCP reports	0
Communications, Training, Coordination:			
No. of BCC materials produced/disseminated (by intervention and type)	Quarterly	Routine reports from partners involved in BCC	0
No. of training courses offered/persons trained on malaria micro-scopy, case management, management of severe malaria, IPT, etc.	Every 6 months	Training reports	0

No. of meetings of National Malaria Task Force (or equivalent) and Working Groups	Quarterly	Malaria Task Force/Working Group minutes	0

Footnotes: * = Cost of activity to PMI will depend on whether or not system already in place, functional, and adequately resourced.

** = Assumes no major policy change regarding SP use for IPTp within life of initiative; otherwise will monitor use of recommended drug

Evaluation proposal for PMI - TANZANIA

Activity (M&E, operations research, capacity building, or programmatic activity)	Year and estimated cost[a] ("x" indicates activity is proposed for a given year)						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
"Phase" of programmatic activities	Base-line	Scale-up		Full implementation (i.e., malaria mortality should be reduced by 50% for the 3-year period)			
DHS with "regular" sample size (10,400 women), i.e., to estimate $_5q_0$ for the 5 years before survey	Done						
DHS with extra sample size (17,326 women), i.e., to estimate $_5q_0$ for the 3 years before survey[b]							X ($2,700,000)
DSS x 2 with population sizes of 60,000 each to measure all-cause and malaria mortality[c]		X ($200,000)*	X ($200,000)	X ($200,000)	X ($200,000)	X ($200,000)	
Study to estimate sensitivity and specificity of verbal autopsy's ability to identify malaria deaths[e]			X ($40,000)				X ($40,000)
National MIS with anemia and parasitemia[e] at end of rainy season (plus info for wealth index and factors related to all-cause mortality)[a]		X ($200,000)		X ($200,000)	X ($200,000)		
National health facility survey in outpatient sick child clinic and antenatal clinic to evaluate malaria case management, antimalarial drug stocks, IPT use, and other malaria-related health worker functions		X ($60,000)		X ($60,000)		X ($60,000)	
Collect HIS data and hospital data on outpatient and inpatient child malaria, severe anemia, deaths, hospital utilization, ITNs distributed (regular, LLITNs), ITNs retreated, and ACTs used for children[e]		X ($30,000)	X ($20,000)	X ($20,000)	X ($20,000)	X ($20,000)	X ($20,000)
Data collection for "confounders" (rainfall, urbanization, wealth, etc)		X ($5000)	X ($5000)	X ($5000)	X ($5000)	X ($5000)	X ($5000)
Supervision and Quality Improvement Data monitoring		X ($80,000)	X ($50,000)	X ($50,000)	X ($50,000)	X ($50,000)	X ($50,000)
Estimated total for each year		**$575,000**	**$315,000**	**$535,000**	**$475,000**	**$335,000**	**$2,815,000**
Estimated total for each year that PMI would have to cover (assuming							

other malaria initiatives do not contribute to the plan and assuming two DSS sites are supported) **Estimated grand total for all years = $2,660,000**		$535,000	$315,000	$535,000	$475,000	$335,000	$465,000b

Footnotes (Tanzania plan):

*This amount ($200,000) is included under the country budget.

[a] Many of the costs are still very rough estimates. Except for DHSs, cost estimates do not include indirect costs that might be needed for organizations that work in the field to carry out the activities. If the capacity-building component of the plan is successful, MIS costs might decrease over time, as less external technical assistance is required.

[b] Assumes a shorter questionnaire that only collects information needed to estimate child mortality for the additional sample of women (to reduce survey cost). Also, it might not be necessary to collect anemia in this survey, as the M&E plan proposes an MIS in 2010 that measures anemia. The estimated cost of a DHS in 2011 with a regular sample size is $2,350,000; increasing the sample size as proposed would add another estimated $350,000 (so the total estimated cost for the large DHS in 2010 is $2,700,000). It is assumed that the PMI would only have to pick up the add-on cost of $350,000.

[c] The cost estimate is based on an annual cost of $3 per person under surveillance per year, plus $100,000 during the first year for start-up costs, such as vehicles and computers.

[d] Necessary conditions are: 1) a high proportion of births occur at health facilities, 2) a high fertility rate, and 3) low use of contraceptives.

[e] This is an operations research component of the evaluation. The idea is that the PMI might be a unique opportunity to collect large amounts of monitoring and evaluation data at one time; thus, for a few targeted data types (e.g., parasite prevalence, hospital-based surveillance), the M&E plan proposes to collect the data and then evaluate its validity, utility, and cost.

Annex 3
Entomological Monitoring and evaluation

PMI – Entomological Monitoring and Evaluation

Tanzania will have the capability to effectively monitor vector mosquito populations for susceptibility to insecticides to detect selection for physiological and behavioral insecticide resistance associated with IRS/ITN use. Behavioral resistance will be monitored through human bait collections conducted inside and outside houses with IRS/ITNs. The *Anopheles* species mosquitoes collected from the human bait collections will be evaluated for physiological resistance using the CDC Bottle assay, and subsequently identified to species and the sporozoite rate determined using the *P. falciparum* CSP ELISA.

Indoor *Anopheles* vector densities will be monitored to detect changes in IRS/ITN insecticidal efficacy and changes in man-vector contact rates. Efficacy will be monitored and evaluated using indoor pyrethrum spray collections with the mosquitoes collected identified to species and the sporozoite rate determined using the *P. falciparum* CSP ELISA.

Quality assurance of IRS treatment and ITNs will be monitored to verify both initial efficacy and longevity of ITNs and IRS treatment. The standard WHO cone bioassay will be used to for these evaluations.

Entomology M&E will require personnel trained in mosquito collection and identification and an insectary to rear mosquitoes needed for the bioassays. An ELISA testing capability may be established in Tanzania, or mosquitoes will be sent to a central/regional laboratory for analysis. When resistance is identified, CDC-Atlanta staff will assist in identification of the mechanism(s) using biochemical and molecular methods.