



**NATIONAL MALARIA ELIMINATION
ACTION PLAN 2015-2020**

Ministry of Health Belize

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Contextual Analysis

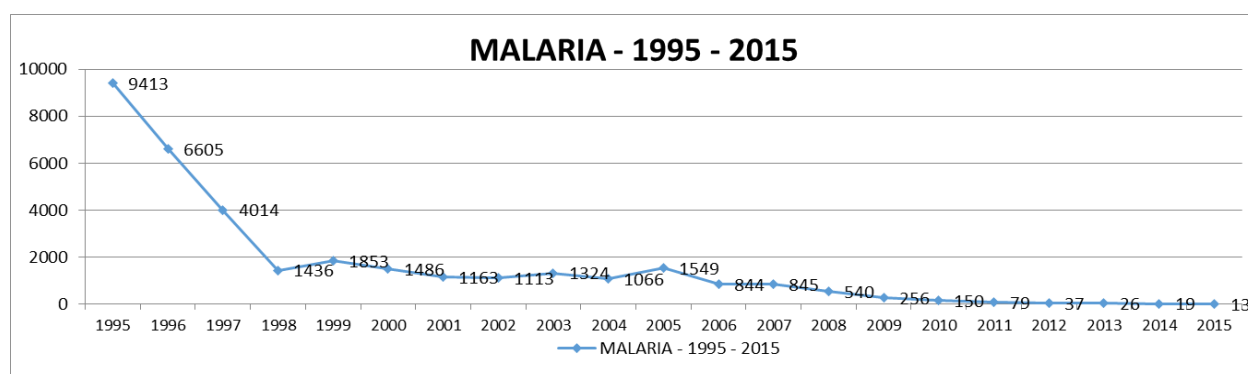
Belize is located in Central America, it shares a border with Mexico to the north, Guatemala to the west and south, and the Caribbean Sea to the east. The total land area of Belize is 22,700 km². The country has a culturally diverse population estimated at 368,310 (Males 184,157 and Females 184,153) according to the Statistical Institute of Belize population estimate for 2015. Belize is comprised of six administrative districts: Belize, Cayo, Corozal, Orange Walk, Stann Creek and Toledo. The urban-rural distribution is 45.1% urban and 54.9% rural in 2012.

The Belize health care system was restructured in 1999 and the decentralization of the authority to the regional health teams was established. As part of the health sector reform four administrative health regions were born: (Northern Region, Central Region, Western Region and Southern Region). The health care system is based on a primary care approach however, secondary services are available at all health regions and tertiary services at the referral hospital. Provision of health services is the responsibility of the Government of Belize through the Ministry of Health and services are provided free of cost in the public health system.

The health care system is primarily financed by the Government of Belize. The Ministry of Health budget represented 11.9% of the total government budget and 3.1% of GDP in 2014. Of interest to note is that within the Caribbean region Belize has one of the lowest per capita health expenditure yet with moderate achievements such as, reduction of 95% of Malaria Cases now in pre-elimination phase, immunization coverage of > 95%, life expectancy at birth of 73 years for males and 76 years for females. Therefore, the country has made effective investments with the limited resources in order to achieve better health outcomes.

Situation Analysis of Malaria in Belize

Between 2000 and 2014 the country achieved a 98% reduction in cases from 1,486 cases to 19 in 2014, surpassing our MDG goal for 2015. Malaria continues to be concentrated mostly in the Southern and Northern districts and likewise, cases are now concentrated in a few communities. In 2014 indigenous transmission occurred in 5 localities as compared to 29 communities in 2011. In Stann Creek, there was indigenous transmission in the localities of Trio, San Roman, Santa Rosa, and Red Bank which accounted for 89% of the total cases.



The drastic reduction in malaria cases should not be reason for complacency. Frequent traveling of Belizean nationals to malaria endemic areas as well as the constant increase of immigrant workers in the agriculture and tourism industry pose a constant threat for the reintroduction of the plasmodium parasite into malaria free areas. Plasmodium vivax account for 100% of detected cases, as *p. falciparum* was eliminated in 2006. The program has incorporated Coartem (Artemether & Lumefantrine) into its treatment regimen to treat patients coming from areas with known Chloroquine resistance. Long Lasting Insecticide Treated Bed nets (LLIN's) are now used in combination with IRS in areas with transmission. Daily migration through our borders at both legal and illegal crossings continues to be a challenge for the spread of malaria and other mosquito borne diseases. Through the support of the Government of Belize, the European Union, and the Global Fund through the EMMIE initiative, which seeks to build capacity, strengthen the surveillance of Malaria, and improve the capacity to respond timely to outbreaks and carefully manage cases, the goal of elimination seems achievable now more than ever.

Malaria Program in Belize

The Vector Control Program in Belize has come a long way in the control of Malaria and to achieve pre-elimination status. In 1994 the incidence of Malaria peaked at 10,411 but since then has been on a steady decline to 19 cases in 2014. The fundamentals which are responsible for this drastic reduction have been:

- ❖ Early case detection by a network of Voluntary Collaborators (VCs) and Community Health Workers (CHWs), and prompt confirmation of the diagnosis by trained Microscopists.
- ❖ Efficacious treatment with a 14 day semi-supervised Chloroquine / Primaquine combination chemotherapy instituted in 1976
- ❖ And bi-annual Indoor Residual Spraying (IRS) initially done since 1954 with DDT as part of the Malaria Eradication Program and later (in 1993) changed to Deltamethrin. IRS is now used in combination with long lasting insecticide treated nets (LLIN)

Malaria as an endemic tropical disease has remained under control. The contributing factors of transmission, i.e. environmental, climatic, geographic, socio-economic can be found in all six districts of the country. The predominant specie of malaria in Belize is Plasmodium Vivax responsible for 100% of positive cases since 2006; Plasmodium Falciparum cases are detected every other year from travelers to endemic regions. The incidence of malaria has gradually decreased since 2000 and we have since surpassed our Millennium Development Goals (MDG 6: combat HIV/AIDS, malaria and other diseases (including dengue)). Target 6C of MDG 6 aimed to have halted by 2015 and begun to reverse the incidence of malaria and other major diseases. The program is in a pre-elimination status and is currently going through a re-orientation process to enhance its surveillance strategies through risk stratification, timely interventions using a combination of IRS and LLIN, vector surveillance, improved diagnosis, and treatment and follow up of patients.

Vision

Belize elimination of autochthonous transmission of Malaria by 2020

Mission

To eliminate local transmission of Malaria in Belize under the leadership of the Ministry of Health - guided by the strategies and objectives of the Regional Malaria Action Plan for the Americas 2016-2020, the Global Technical Strategy for Malaria 2016-2030 and those of the EMMIE initiative (Elimination of Malaria in Mesoamerica and the Island of Hispaniola), using an integrated approach through the support of local stakeholders, community participation, and the support of neighboring countries.

National Malaria Plan of Action Framework

The plan is based on five strategic lines of actions reflective of the global (GTS) and the Mesoamerican master plan to improve malaria control with the goal of elimination; taking into consider the national dimensions.

Components

1. Malaria Prevention, Surveillance and Early Detection and Containment of Outbreaks
2. Malaria Diagnosis and Treatment
3. Integrated Vector Management
4. Advocacy, Communication, Partnerships and Collaboration
5. Improved Human Resource Capacity

Strategic Goals

1. Strengthen the capabilities of surveillance systems to achieve universal coverage in the monitoring and evaluation of cases, and proper population case base reporting.
2. Strengthen early diagnosis and treatment of malaria through quality diagnostic tests, and effective treatment according to national standards.
3. Implement appropriate vector control interventions based on the stratification of the risks of malaria transmission in all locations: ensuring full coverage with Indoor Residual Spraying (IRS) and Long Lasting Insecticide Nets (LLINs) in priority locations.
4. Strengthen the partnerships with the civil society in response to the prevention, diagnosis, treatment, monitoring and control of malaria.
5. Capacity and skills in malaria elimination expanded to improve performance and management at the regional level.

COMPONENT 1		MALARIA PREVENTION, SURVEILLANCE AND EARLY DETECTION AND CONTAINMENT OF OUTBREAKS		
STRATEGIC GOAL		Strengthen the capabilities of surveillance systems to achieve universal coverage in the monitoring and evaluation of cases, and proper population case base reporting.		
Component ACTIVITY 1.1	Improve Malaria Case Reporting and Information Analysis			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
1.1.1	Development of Malaria Elimination Plan	National Malaria Elimination Plan Developed and Implemented	\$800,000	Possibility of Hiring a Consultant through PAHO, Global Fund Project or through Clinton Health Access Initiative (CHAI) who is supporting EMMIE project.
1.1.2	Updating of Malaria surveillance guidelines and strategies to reorientation of malaria efforts towards elimination.	National Malaria Guidelines Updated		Hiring of Consultant through Global Fund Project
1.1.3	Development of a Malaria investigation and reporting module integrated into the Belize National Health Information System	Electronic Malaria investigation and reporting model developed and implemented countrywide		In collaboration with BHIS IT Unit through Global Fund Project
	Maintain adequate Fever Case Surveillance (Active and Passive)	ABER (Annual Blood Examination Rate) of 10% in communities w/ transmission and minimum 7% per district		Increase active case detection, especially in communities with Malaria cases over the past 3 years, communities with high incidence of fever cases, at the various health facilities.

COMPONENT 2		MALARIA DIAGNOSIS AND TREATMENT		
STRATEGIC GOAL		Strengthen early diagnosis and treatment of malaria through quality diagnostic tests, and effective treatment according to national standards.		
ACTIVITY 2.1	Ensure availability of quality antimalarials			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
2.1.1	Procure laboratory supplies for Malaria labs	Number of malaria laboratories adequately supplied with equipment and materials	\$40,000	Tender Process: review tender list and factor in buffer stock for outbreaks
2.1.2	Ensure there is an adequate stock of supplies at CMS at all times (Minimum of 25% of the estimated yearly use)	Number of vector control district programs adequately stocked with antimalarials		In collaboration with CMS / Monitoring Supply Chain Management of the BHIS
2.1.3	Maintain stock of anti-malaria medication for drug resistant cases	Minimum of 5 ACT treatments procured on a yearly basis		Artemisin Combination Therapy (ACT - Coartem) and Quinine. Support through PAHO.
2.1.4	Evaluation of quality of first line antimalarial treatment (CQ and PQ)	Evaluation Report		Through PAHO and AMI/Ravreda support
ACTIVITY 2.2	Ensure Quality Diagnosis In Malaria Microscopy			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
2.2.1	In Country TBF Quality Control Monitoring.	Number of district programs participating in microscopy in-country quality control system	\$3000	Verification of slides - 10% negative and ALL positive. Cross checking done by peers. Assistance through QA Officer at CML

2.2.2	Assess proficiency of Microscopists through PAHO Quality Assurance Program	Proficiency Report		
2.2.3	Yearly refresher workshop for network of microscopists	Activity Report		
ACTIVITY 2.3	Improve Adherence to Treat Regimen To Reduce Relapses and Resurgence of Malaria			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
2.3.1	Finalize revision of Malaria Guidelines - Including Treatment Protocol	National Malaria Treatment Guideline Updated	\$10,000	Assistance through PAHO
2.3.2	Monitor compliance of Radical Treatment	Number of cases investigated, classified, and treated according to approved malaria guidelines		14 Days Semi-supervised Chloroquin/Primaquin schedule. Both at Public and Private Health Facilities
2.3.3	Revision of Malaria Case Investigation Forms to Capture All Relevant Case Information and Follow-up	Updated Malaria Case Investigation Form		Capturing of treatment record and patient follow up testing as per PAHO guidelines.
ACTIVITY 2.4	Ensure Adequate Coverage of Malaria Diagnosis To Reach All Areas Of The Country			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
2.4.1	Maintain adequate diagnostic coverage and capacity of microscopists in various health regions.		\$160,000	Hiring of additional microscopist needed with resurgence of Malaria in the North and the subsequent increase in TBF's as a result of strengthened surveillance

COMPONENT 3		INTEGRATED VECTOR MANAGEMENT		
STRATEGIC GOAL		Implement appropriate vector control interventions based on the stratification of the risks of malaria transmission in all locations: ensuring full coverage with Indoor Residual Spraying (IRS) and Long Lasting Insecticide Nets (LLINs) in priority locations.		
ACTIVITY 3.1	Stratification of Malaria Risk Areas to Guide Resources and Actions			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
3.1.1	Identify transmission foci and areas with vulnerable populations	Number of foci identified and classified	\$0	Utilization of PAHO/WHO guidelines
ACTIVITY 3.2	Implementation of Appropriate Malaria Prevention Activities			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
3.2.1	Procurement of spraying supplies, equipment, and bed nets	Stock rate of spraying supplies, equipment, and bed nets maintained at zero.	\$375,000	As part of Tender Process for MOH
3.2.2	Monitor the implementation of Indoor Residual Spraying and distribution of LLINs based on risk stratification and outbreaks	Number of foci covered by IRS and LLIN's		IRS to be conducted minimum of every 6 months (preferably every 4 months). Minimum 80% coverage per locality
3.2.3	Assessing the coverage , quality and effectiveness of LLINs	Assessment Report		Support from Belize Vector and ecology Center/University of Notre Dame to monitor residual effectiveness of nets

ACTIVITY 3.3	Monitor Status of Insecticide Resistance and Vector Behaviour In Order To Apply Appropriate Vector Control Measures			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
3.3.1	Updating vector list and behaviours in various health regions	Activity Report		Vector identification and feeding patterns etc.
3.3.2	Conduct routine insecticide resistance studies in various health regions	Activity Report		Support from Belize Vector and ecology Center/University of Notre Dame
COMPONENT 4		ADVOCACY, COMMUNICATION, PARTNERSHIPS AND COLLABORATION		
STRATEGIC GOAL		Strengthen the partnerships with the civil society in response to the prevention, diagnosis, treatment, monitoring and control of malaria.		
ACTIVITY 4.1	Empowering Population in Malaria Prevention Through Improved Knowledge and Community Participation			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
4.1.1	Designing and reproduction of appropriate IEC materials to address specific malaria topics such as prevention, treatment compliance etc.	Availability of culture sensitive IEC materials in all communities in particular those with presenting Malaria cases	\$25,000	Ongoing and initiated by Funding through EU Project
4.1.2	Maintain strong network of Malaria voluntary collaborators and community health workers to assist in education, passive surveillance (taking TBF from febrile patients with malaria symptoms) and to assist with community mobilization	Active and passive community surveillance improved		

4.1.3	Continuous education of population on Malaria prevention and control in both low and high risk areas through health fairs and observation of international events	Number of regional health teams implementing measures aimed at educating the public on malaria		Health Fairs, Open Days, Talk shows, Web publications, news releases, etc. Malaria Day In The Americas
ACTIVITY 4.2	Increased Intersectorial Participation and Coordinate Actions with Private Sector			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
4.2.1	Support community and inter-sectorial meetings with companies/industries hiring migrant workers from endemic areas and those companies/industries working with vulnerable populations and communities	Companies hiring migrant workers informed of malaria surveillance measures	\$25,000	Banana, Citrus and Sugar Cane Industries
ACTIVITY 4.3	Implementation of Communication for Behavioural Impact (COMBI) Strategy			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
4.3.1	Training of Trainers for district health teams	Activity Report		Funding through EU Project COMPLETED
4.3.2	Development and Implementation of district COMBI plans	Number of districts with malaria transmission with COMBI plan being developed and implemented	\$20,000	Initial Funding through EU Project ONGOING

ACTIVITY 4.4	Improve surveillance in border areas with vulnerable populations and areas with transmission or high risk			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
4.4.1	Trans-border meetings with Guatemala and Mexico to share information and plan activities	Activity Report		
COMPONENT 5		IMPROVED HUMAN RESOURCE CAPACITY		
STRATEGIC GOAL		Capacity and skills in malaria elimination expanded to improve performance and management at the regional level.		
ACTIVITY 5.1	Improve Competence of Vector Control Staff			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
5.1.1	Build capacity through the certification of 20 vector control personnel through Diploma course - INSP - Mexico	Number of vector control field officers trained to execute duties related to malaria prevention and control	\$40,000	Funding through EU Project. October/November 2015 Vector Surveillance, IVM, Insecticide resistance monitoring, vector control etc.
5.1.2	Implementation of GIS as a surveillance tool through training of vector control staff in Basic GIS for 24 Vector Control Officers	Number of district programs using GIS as a tool for planning and reporting		Purchase of additional equipment and payment for training through the Global Fund

ACTIVITY 5.2	Malaria Program Re-Orientation			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
5.2.1	Conduct workshops for re-orientation of program and health system towards malaria elimination	Number of workshops conducted held with regional health teams to educate and re-orient malaria program activities towards elimination		
ACTIVITY 5.3	Health Practitioners Training			
	TASK	Indicator	BUDGET REQUIREMENTS	COMMENTS
5.3.1	Socialization of updated malaria treatment guidelines	100% of Medical officers, Rural Health Nurses and Public Health Nurses trained in malaria treatment guidelines	\$10,000	
TOTAL			USD \$1,508,000	