



NATIONAL DENGUE - CHIKUNGUNYA 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 Dengue and Chikungunya in Belize

The first reported outbreak of dengue in Belize was in 1978; since then there have been mild outbreaks every two to three years. The outbreaks have become more frequent and we now experience outbreaks in most areas of the country on a yearly basis. Over the past few years the concern has been growing as we have seen a significant increase in severe cases. The disease is not only found in major urban areas but also in many rural communities. In 2014 there were 634 clinically diagnosed dengue cases countrywide. 3,709 persons were tested of which 683 or 18.4% of tests were confirmed by either NS1 (early antigen test) or NS1 ELISA, thereby emphasizing the need to test for other febrile illnesses which could account for these clinical manifestations. With the circulation of all serotypes of the Dengue virus over recent years, the number of Dengue Hemorrhagic Fever cases have been steadily increasing over the past few years. With the continuous development of the tourism sector and the daily migration of visitors and labourers through our borders, the challenge has not only been with the spread of Malaria but also Dengue and Chikungunya. In 2014 and 2015 Chikungunya was introduced in the West and North of the country respectively, and although transmission has been very focalized, there is a need to improve the surveillance and diagnosis of this disease.

Since October 2014, the Ministry has carried out several sensitization sessions for health personnel, community health workers and the media. Information has been shared through various media sources and IEC materials have been developed and socialized. Chikungunya has now been integrated as part of the routine surveillance for dengue, and also highlighted in all health education activities. The country is supported CARPHA for confirmatory testing and screening is done occasionally by the Central Medical Laboratory.

Seasonal variation of cases

There are a relatively low number of cases during the dry season which is from January to end of May; this is followed by a sharp increase in the middle of June extending to the middle of October. Between October and December, there is a gradual decrease in the number of cases.

Vectors

The main dengue vector in Belize is the *Aedes aegypti*. In 2009 *Aedes albopictus* was first detected in the West of the country and in 2010 in the North. Further monitoring in other areas of the country is being planned in order to fully understand the distribution of *Aedes albopictus*.

Socio-economic factors & Poverty

Garbage disposal practices in many communities create conditions which are ideal for the dengue vector to reproduce. This is compounded by the fact that organized refuse collection is inadequate and in some areas non-existent. In Belize as is the case in most countries, dengue is found in urban setting with high population density but unlike other places, the social conditions and practices in rural Belize do not differ much from the urban settings. Rural communities generate similar per capita amount of garbage as urban towns.

Poverty has long been identified as a risk factor for many chronic and infectious diseases, including dengue. Poor people usually live in homes where internal and external environmental conditions facilitate the virus-host interaction. In addition to living in unprotected (unscreened) homes, poor people often live in crowded conditions and are unable to purchase repellants and

other means of personal protection. The Poverty Assessment Report for 2009 showed that the percentage of the population living below the poverty line in Belize was 43%. These statistics points to the percentage of the population who because of their economic situation, in addition to other risk factors they may have, are at risk of becoming ill with dengue or other vector borne diseases. This is the situation in Belize City, which is the largest and most densely populated area of the country; in this region, the “Southside” of the city accounts for the majority of cases in the Belize district. In most years Belize City account for approximately 50% of all cases and about 70% of those cases located in Southside Belize City. Despite the improvement in access to “piped” water in rural areas in recent years, a significant percentage of households still store water either to meet their daily needs or as a cost saving measure. This practice serves to create the condition for the *Aedes aegypti* mosquito to reproduce, since these containers are often left open and in areas shaded from the sun.

Dengue Program in Belize

Under the Environmental Health Programme, the Vector Control Program has the responsibility for the maintenance of a healthy environment that provides for the prevention and control of vector borne diseases, particularly Malaria, Dengue, Chikungunya and Chagas Diseases. It executes, on an ongoing basis a series of Dengue control activities such as adult mosquito control through thermal and ULV applications, Indoor Residual Spraying, and larviciding. The vector control program is supported by a network of over 300 Community Health Workers and Voluntary Collaborators. There is also a close working relationship with the Health Education and Community Participation Bureau – which is the health education arm of the Ministry.

Strategies of the vector control program:

- ❖ Integrated Management Strategy for Dengue
- ❖ Integrated Vector Control
- ❖ Health Education & Community Participation
- ❖ Promote and reinforce changes in human behavior through health communication and health Integrated approach to Dengue/Chikungunya prevention and control

Purpose

The purpose of the National Dengue/Chikungunya Plan of Action is to reduce the social and economic effects of Dengue and Chikungunya in Belize

Objectives

To achieve a 20% reduction in the incidence of Dengue and Chikungunya by 2020 in Belize under the leadership of the Ministry of Health - guided by the WHO/PAHO framework of Integrated Management Strategy for Dengue Prevention and Control (IMS-dengue) and the strategies and objectives of the Regional Master Plan for the Integrated Management of Dengue/Chikungunya Prevention and Control.

National Dengue Plan of Action Framework

The plan is based on six strategic lines of actions reflective of the Regional Master Plan for the Integrated Management of Dengue/Chikungunya Prevention and Control and the Belize National Health Sector Strategic Plan.

Components

- ❖ Integrated management strategy for Dengue and Chik-V
- ❖ Epidemiological Surveillance
- ❖ Laboratory diagnosis
- ❖ Patient care
- ❖ Integrated vector management, advocacy, communication, partnerships and collaboration

Strategic Goals

1. Implement appropriate vector control interventions based on stratification of risks, guided by entomological and epidemiological indicators
2. Strengthen surveillance system for dengue and Chikungunya prevention through early detection and containment of outbreaks
3. Strengthen capacity of laboratory network to ensure timely and quality diagnostic tests
4. Strengthen clinical diagnosis and case management of dengue and Chikungunya
5. Implement appropriate vector control interventions based on stratification of risks, guided by entomological and epidemiological indicators
6. Build multi-sectorial partnerships with key stakeholders to educate the public on dengue and Chikungunya, prevention and control to enable collective decisions and actions aimed at reducing risk

Component: Integrated Management Strategy for Dengue and Chik-V

Expected outcomes	Indicators	Sources of verification	Assumptions
Implementation of appropriate vector control interventions based on stratification of risks, guided by entomological and epidemiological indicators	1. 100% of district programs based on the framework of IVM 2. 100% of field officers trained in the core competencies of IVM	<ul style="list-style-type: none"> Regional Health Plans Annual Reports Training/Activity reports 	Adequate human resources installed at the various health regions to adequately address vector borne diseases of major importance

Integrated Management Strategy for Dengue and Chik-V Component: Activities—Tasks—Implementation Schedule and Responsible Party

Activity	Task	Implementation schedule			Responsible party	Budget
		S	M	L		
1- Development of National Integrated Management Strategy Plan for Dengue and Chik-V	Development of plan and sensitization w/ stakeholders including public and private sector	X			National Environmental Health Program - MOH	
	Sensitization of environmental health workers and other stake holders on the core competencies of IVM	X	X		Regional Environmental Health Program - MOH	
	Integration of Dengue/Chik-V IVM Strategic Plan into regional vector control operational plans	X	X		Regional Health Management Teams	
2- Formation of a multidisciplinary (inter-institutional and cross-sectorial) National Technical	Development of a terms of reference for development of national technical Group (Define the actors and functions)	X			Office of the Director of Health Services & Policy Analysis & Planning Unit	
	Preparation of technical recommendations.	X	X		Vector Control Chief of Operations	

Group on Vector Borne Diseases	Set a work timetable for the National Technical Group that includes a follow-up, monitoring, and evaluation plan. Reports for stakeholders	X	X	X	National Environmental Health Program - MOH	
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Epidemiology Component

Epidemiology Component: Expected Outcomes—Indicators—Sources of Verification and Assumptions

Expected outcomes	Indicators	Sources of verification	Assumptions
Strengthened surveillance system for dengue and chikungunya prevention through early detection and containment of outbreaks	<p>1- 100% of regional health teams having carried out internal sensitization of health care workers and implementing surveillance measures for Dengue and Chik-V</p> <p>2- 100% of the countries issue periodic epidemiological bulletins that contain an integrated analysis of the situation of dengue and CHIK as of 2017. (Quarterly or annual National epidemiological bulletins developed)</p>	<ul style="list-style-type: none"> • National epidemiological reports • Belize Health Information System Reports and Alert System in Use • Reports to PAHO/WHO • IMS-dengue progress reports 	Compliance in the use of the National Health Information System

Epidemiology Component: Activities—Tasks—Implementation Schedule and Responsible Party

Activity	Task	Implementation schedule			Responsible party	Budget
		S	M	L		
1- Update the national surveillance systems for dengue and CHIK-V	Programmatic integration of Dengue and CHIK-V surveillance.	X	X		Regional Health Management Teams	
	Review and adjust case definitions, indicators and information flow		X		Epidemiology Unit – Ministry of Health	
	Review and adjust the risk stratification criteria with an integrated approach. (including risk mapping – use of GIS)		X		Regional Environmental Health Programs	
	Review and adjust the operational plans to ensure capacity to respond to outbreaks		X		Regional Environmental Health Programs	
2- Adapt the national surveillance systems and platforms with an integrated approach	Standardize the methodologies for data analysis and epidemiological surveillance indicators for dengue and chik-v in line with the regional recommendations	X	X		Epidemiology Unit – Ministry of Health Regional Health Management Teams	
	Plan the prevention and control response based on the analysis of information generated by the integrated surveillance system. EPI & Vector Control Programs		X		Regional Health Management Teams	
3- Exchange of information through surveillance team for action	Conduct weekly analysis of trends to stratify epidemiological situation to ensure best use of resources	X			Regional Health Management Teams	

Laboratory Component

Laboratory Component: Expected Outcomes—Indicators—Sources of Verification and Assumptions

Expected outcomes	Indicators	Sources of verification	Assumptions
Strengthen capacity of laboratory network to ensure timely and quality diagnostic tests	1- 100% of national and regional labs with installed capacity for serological diagnosis. 2- 100% of national and regional labs participate in an External Quality Assurance Program (EQAP).	<ul style="list-style-type: none"> • Surveillance system reports • Results analysis and reports • Reports on the quality review process • Proficiency test results • Inventory of reagents/supplies 	Adequate budget allocations to ensure testing for Chik-V and other emerging vector borne diseases Compliance with PAHO/WHO algorithms

Laboratory Component: Activities—Tasks—Implementation Schedule and responsible party

Activity	Task	Implementation schedule			Responsible party	Budget
		S	M	L		
1- Establish epidemiological and laboratory criteria for biological sampling according to surveillance protocols	Update national algorithm for laboratory diagnosis based on local expertise and technical counterparts	X			Director Central Medical Laboratory	
	Disseminate and implement the diagnostic algorithm to all health regions	X			Director Central Medical Laboratory	
	Conduct workshops with regional laboratory teams to sensitize on changes to algorithm and other protocol changes	X	X		Director Central Medical Laboratory & Quality Assurance Officer	

2- Strengthen the surveillance and response capacity of the region's laboratory network	Promote the implementation of reference techniques (serological and virological) for the diagnosis of dengue and other arboviruses in the national lab			X	Director Central Medical Laboratory	
	Work with the Central Medical Stores to ensure proper forecasting of quality inputs in a timely manner	X			Director Central Medical Lab & Director CMS	
	Achieve the systematic interaction of the laboratory with the epidemiological surveillance, clinical management, and vectors components in order to ensure the adequate flow of information.	X	X		Epidemiological Surveillance Laboratory	
3- Improve quality management system in the diagnosis of vector borne diseases	Promote the development and implementation of quality control policies in the national laboratories and domestic networks (proficiency tests)	X	X		Director Central Medical Laboratory & Quality Assurance Officer	
	Maintain a continuing education and training program for national laboratory network personnel, to include the latest scientific advances in the field.			X	Director Central Medical Laboratory	
	Regularly review the quality processes and operations of the national lab and regional labs	X	X		Director Central Medical Laboratory & Quality Assurance Officer	
	Arrange for the participation of national laboratories in an External Quality Assurance Program (EQAP).		X	X	Director Central Medical Laboratory	
4. Ensure Adequate Diagnostic Coverage and Supply Stock of Testing Supplies	Arrange for the distribution of critical supplies and reagents for the support and continuity of laboratory surveillance (proper forecasting of necessary inputs ie. reagents)	X	X	X	Director Central Medical Laboratory w/ Director Central Medical Stores	

	Enforce use of supply chain management system within Belize Health Information System	X	X	X	National and Regional Laboratory Managers	
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Patient Care Component

Patient Care Component: Expected Outcomes—Indicators—Sources of Verification and Assumptions

Expected outcomes	Indicators	Sources of verification	Assumptions
Strengthen clinical diagnosis and case management of dengue and chikungunya	<p>1- Health care personnel trained in the diagnosis and treatment of symptoms of Dengue and Chik -V</p> <p>2- 100% Medical and Nursing personnel providing treatment according to approved PAHO/WHO clinical management recommendations/guidelines</p> <p>3- 100% Regional Management teams conducting routine quality monitoring or clinical audits of use of standards and guidelines</p> <p>4- 100% of health regions having developed/adopted national preparedness and response plan for Chik-V and Zika</p>	<ul style="list-style-type: none"> • Reports on training plans that have been conducted. • Country guides implemented in each country. 	Chief of Staff and Nursing Administrators conducting routine clinical monitoring

Patient Care Component: Activities—Tasks—Implementation Schedule and responsible party

Activity	Task	Implementation schedule			Responsible party	Budget
		S	M	L		
1- Strengthen the capacities of healthcare workers to ensure quality of care in both public and private health services	Print, distribute, and implement national guides on dengue and chik-v that are in line with PAHO/WHO recommendations.	X	X		Ministry of Health – Epidemiology Unit	
	Conduct training in triage, timely diagnosis, and clinical epidemiological criteria, mainly for personnel at the first and second levels of care.	X	X		Regional Health Management Teams	
	Perform quality of care audits with emphasis on patients in serious condition and dengue/chik-v fatalities.	X	X	X	Regional Health Management Teams	
	Develop training workshops for public and private personnel on health services organization, including outbreak response.		X	X	Regional Health Management Teams w/ Epidemiology Unit – Ministry of Health	
2-Improve the response capacity of services at the primary and secondary levels of care in order to reduce the saturation of specialized hospitals.	Provide training to health facilities managers in management and organization of health services		X	X	Regional Health Management Teams	
	Review and adjust the hospital contingency plan annually		X	X	Regional Health Management Teams	
	Strengthen the capacity to manage patients with dengue (warning signs) in primary care units.		X	X	Regional Health Management Teams	

ADVOCACY, COMMUNICATION, PARTNERSHIPS AND COLLABORATION

Advocacy, Communication, Partnerships and Collaboration component: expected outcomes—indicators—sources of verification and assumptions

Expected outcomes	Indicators	Sources of verification	Assumptions
Build multi-sectorial partnerships with key stakeholders to educate the public on vector borne disease prevention and control to enable collective decisions and actions aimed at reducing transmission	<p>Regional Management Team with established partnerships with local government and relevant stakeholders.</p> <p>Communication for Behavioural Impact (COMBI) Strategy implemented within all districts targeting hotspots</p>	<ul style="list-style-type: none"> Combi plans Surveillance Team Minutes and reports 	<p>Teams with necessary inputs to conduct activities in rural areas.</p> <p>Management teams ability to engage stakeholders throughout the process</p>

Advocacy, Communication, Partnerships and Collaboration Component: Activities—Tasks—Implementation Schedule and Responsible Party

Activity	Task	Implementation schedule			Responsible party	Budget
		S	M	L		
1 - Empowering Population in Dengue and Chikungunya Prevention Through 2 - Improved Knowledge and Community Participation	Designing and reproduction of appropriate IEC materials to address dengue and chik-v – targeting behaviour change	X			Ministry of Health – Health Education and Community participation Bureau	
	Maintain strong network of community health workers to assist in community mobilization, education, surveillance and referral of febrile patients to health facilities	X	X	X	Regional Health Management Teams	

	Continuous education of population on Dengue and Chikungunya through various media and social activities and events		X	X	Regional Health Management Teams	
	Advocacy to promote the inclusion of dengue/chik-v into primary school curriculum			X	Director of Health Education and Community Participation Bureau	
2- Increased Intersectorial Participation and Coordinate Actions with Private Sector	Support community and inter-sectorial meetings with companies/industries hiring migrant workers from endemic areas for disease prevention and control	X	X		Regional Health Management Teams	
	Conduct joint activities with private sector and other stakeholders geared at information sharing, improving environmental sanitation and health promotion	X	X	X	Regional Health Management Teams	
3- Implementation of Communication for Behavioural Impact (COMBI) Strategy	Training of Trainers for district health teams	X			Ministry of Health	
	Development of district COMBI teams for vector control – Vector Control, Public Health, HECOPAB, Public Health Nurses		X		Regional Health Management Teams Regional Environmental Health Programs	
	Development and Implementation of district COMBI plans	X	X	X	Regional Health Management Teams Regional Environmental Health Programs	