

Pan American Health Organization



World Health Organization

REGIONAL OFFICE FOR THE Americas







REGIONAL OFFICE FOR THE Americas

Haroldo Bezerra, Regional Advisor Public Health Entomology PAHO/WHO – WDC

**Global Health Consortium GHC/ 8th Internacional Conference on Global Health** 

Arbovirus in Latin America and the Caribbean: Strategies and challenges for prevention and control

Miami - May 23, 2018

\*\*\*\*

# Integrated Vector Management/IVM: a regional perspective





## **Contents**

- Background
- Key elementes of IVM
- Progress and challenges in the implementation of IVM
- Next steps



## Arboviruses



## **Vector-Borne Diseases (VBD) in the Region of the Americas**



Eradication of *Aedes aegypti* in the Americas as a vector for YF 1947-1970





- Lack of specialized human resources
- Lack of quality control
- Inadequate impact evaluations
- Little engagement outside of the health sector

Baka Baka Venesusta Belvia Guyana Peu Surianne Argentna Commis Commis Rerpotic E Shrador Belvia Commis Belvia Commis Commis Belvia Commis Commis Belvia Commis Belvia Commis Belvia Commis Belvia Commis Belvia Commis Belvia Commis Belvia Commis Belvia Commis Belvia Belvia Commis Belvia Commis C	Country	Tota	Dengu	e Chikungunya	Zika	Yellow Fev	r Malaria	Chagas Dis.	Leishmania.	Onchocerci.	Plague	Lymphatic .	Schistosor
Ficuador Vereszetás Belvia Gigyana Peru Algentina Colombia French Culuana Contentia Prench Culuana Dominica Benhans Belvia Conta Recubic El Sivador El Sivador El Sivador Belvia Belvia Belvia Belvia Belvia Benhans B	Brazil		11	•		-	•	•	•			•	•
Venezana Beliva Gryana Peru Suritame Argentina Suritame Argentina Colombia French Guisana Galatemala Prapayay Conta Rica Desinca Republic Desinca Republic Desi	Ecuador	_		-	-			-		-	-	-	
Visitiana Constanti Propio Suritante Propio Constanti Argentina Constanti Present Guiana 7 Present Guiana 8 Present Breboto 3 Curza ao 8 3 Curza ao 8 3 Curza ao 8 3 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	Venezuela	_									-		
Downa Peru Segoratina Correctiona Construction Construction Perus Serie Collina Construction Perus	Pethda	_								-	-		
Gryana Suriname Argentina Combia Combia Suriname Franch Guiana Guatemaia Pranama Prana	Bolivia	_				_		-			•	-	
Peru Agentina 7	Guyana	_	•				•	•			-	•	
Suriname  Argentina 7 Combila 7 Comb	Peru	_	8 🔴	•	•	-	•	•	•		•		
Argentina 7 French Gulana 7 Matico 7 Pragnars 7 Pragnars 7 Pragnary 7 Pragnary 7 Cotat Arica 6 Dominican Republic 6 El Salvador 6 El Salvador 6 Belize 5 Monturas 6 Belize 5 Saint Lucia 7 Matti 3 Bahamas 3 B	Suriname	_	8 🔴	•	•	•	•	•	•				•
Colombia 7 French Guana 7 Matico 7 Panama 7 Panama 7 Panama 7 Deminica Republic 6 El Salvador 6 Honduras 6 Eliza 5 Balta and Tohage 4 United States of Ane. 4 Aroguia 3 Balta and Tohage 4 United States of Ane. 4 Aroguia 3 Balta and Tohage 3 United States of Ane. 4 Aroguia 3 Balta and Salvada 3 Balta and Salvada 3 Balta and Salvada 3 Balta and Salvada 3 Corrada 3 Dominica 3 Corrada 3 Dominica 3 Corrada 3 Dominica 3 Corrada 3 Dominica 3 Corrada 3 Dominica 3 Dominica 3 Corrada 3 Dominica 3 Corrada 3 Dominica 3 Sant Kits Anathe 3 Sant Kits Anathe 3 Sant Kits And Nevis 2 Ciba 2 Tota 1 United States Vigni L 3 Barta All 2 Corrada 2 Dominica 3 Sant Kits Anathe 3 Sant Kits Anathe 3 Sant Kits Anathe 3 Corrada 2 Corrada 2 Dominica 3 Sant Kits Anathe 3 Sant Kits Anathe 3 Sant Kits Anathe 3 Corrada 2 Corrada 4 Corrada 2 Corrada 3 Corrada 4 Corrada	Argentina	_	7 🔴	•	•	•	•	•	•				
French Gulana 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Colombia	_	7 😐	•	•	•	•	•	•				
Guatemala Metico Pansana Praguay Ceta Rica Dominica Republic El Salvador Nicaragua Balvaros Balvaros Saint Lucia Tinicata and Tobage United States of Ane. Argella Cataba Sant Barbada Araba Baharas Babaras B	French Guiana	_	7 😐	•	•	•	•	•	•				
Mexico Praguay Praguay Cotta Rica Bominican Republic El Salvador Nicaragua Belize Balta Balta Sint Lucia Tinisidad and Totago United State of Ane. Anguila Anguila Bahanas Bahanas Bahanas Babandos Bahanas Bababas Babanas Babanas Bababas Babanas Babanas Babanas Babanas Babanas Bababas Babanas Bababas Babanas Babababas Babababas Bababas Bababas Baba	Guatemala	_	7	•	•		•	•	•	•			
Paname 7 Pragayay 7 Pragayay 7 Pragayay 7 Dominican Republic 6 E Slavador 7 E Slava	Mexico	_	7 .	ě						ě			
The appart of the second secon	Panama	_	7		-	_	-	-	-	-			
To during the second se	Paraguay	_	÷ .										
Carsta Article of the fondures	Paraguay Costa Risa	_											
Dominical Republic Is Silvador Honduras Kicaragua Belize Haiti Saint Lucia Trinisda and Tobago 4 Trinisda and Tobago 5 Trinisda and Trinisda 5 Trinisda and Trinisda	Costa Rica	_						-	-			-	
El Salvador Honduras Nicaragua Belize Haiti Saint Lucia Haiti Saint Lucia Antigua and Barbuda Antigua and Barbuda Antigua and Barbuda Antigua and Barbuda Antigua and Barbuda Antigua and Barbuda Bahamaa Ba	Dominican Republic		•				-	-	-			-	
Honduras 6 Reiza 5 Saint Lucia 6 Haiti 5 Saint Lucia 7 Trinistad and Tobago 4 Anguila 3 Anguila 3 Barbados 3 Barbados 3 Bonaire, Saint Eustati. 3 Bonaire, Saint Martin 3 Saint Marti	El Salvador		• •	•	•		•	•	•				
Nicaragua 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Honduras	_	6 <b>O</b>	•	•		•	•	•				
Belize sint Lucia 5	Nicaragua	_	6 🔴	•	•		•	•	•				
Haiti saint Luccia de la construction de la construcción de la constru	Belize	_	5 🔴	•	•		•	•					
Saint Lucia dan Tobago 4 Trinida dan Tobago 4 Anguila 3 Anguila 3 Bahamas 3 Bahamas 3 Bahamas 3 Bahamas 3 Bahamas 3 Bahamas 3 Bonaire, Saint Eustati 3 Caracao 0 Caracao 3 Caracao 3 Car	Haiti	_	5		•		•						
Trinidad and Tobago United States of Ame. Anguilla Antigua and Barbuds Antigua and Barbuds Antigua and Barbuds Antanas Barbados Barbados Barbados Barbados Barbados Barbados Barbados Barbados Barbados Coyman Islands Cayman Islands Caracao Bentier, Virgin Islands Caracao Guadeloupe 3 Jamaica 3 Jam	Saint Lucia	_	4		-		-						-
Antigue and Barbudo Anguila and Barbudo Antigue and Barbudo Antigue and Barbudo Banhanas 3 Banhanas 3 Banhanas 3 Banhanas 3 Banhanas 3 Banhando 3 Curacao 3 Grenada 4 Grenada 4 Grenada 4 Grenada 4	Trinidad and Tobano	_	4		-	_							
Antigua and Barbuda Antigua and Barbuda Anuba Barbados Barbados Barbados Bonaire, Saint Eustati. British Virgin Islands Coyracab Dominica Grenada Jamaica Grenada Jamaica Saint Barthelemy Jamaica Saint Martin Saint Martin Saint Martin Saint Marten Turks and Galcos Isla. United States Virgin L Bermuda Cuba 2 Chile Totsi Montserrat 2 Saint Kits and Nevis 2 Chile Totsi Montserrat Saint Marten Saint Mar	United States of Ame	_				· · ·						00	10
Antigua and Barbada Antigua and Barbada Bahamas Bahama	Onned States of Ame	_						1		Tar		-701	16
Antigue and Barbuda       3         Bahamas       3         Cayman Islands       3         Grenada       3         Jamaica       3         Jamaica       3         Jamaica       3         Saint Martin       3         Saint Vincent and the       3         Saint Vincent and the       3         Saint Vincent and the       3         Saint Vincent and thevis       2         Cuba       2         Montserrat       2         Saint Kitts and Nevis       2         United States Virgin L </td <td>Anguilla</td> <td>_</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1200</td> <td>in the second</td> <td>LU</td> <td>IV</td>	Anguilla	_	-							1200	in the second	LU	IV
Aruba       3 <td>Antigua and Barbuda</td> <td>_</td> <td>a 😐</td> <td>•</td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td>- 11 2</td> <td>7 6</td> <td></td> <td></td>	Antigua and Barbuda	_	a 😐	•	•					- 11 2	7 6		
Bahamas 3 3 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Aruba	_	3 🔴	•	•				R. Cross-Salar I	Marra Contractioner	aut		
Barbados 3 Bonaire, Saint Eustati. Barbish Vrigin Islands 3 Cayman Islands 3 Cayman Islands 3 Cayman Islands 3 Caracao 3 Caracao 3 Grenada 3 Grenada 3 Grenada 3 Grenada 3 Grenada 3 Martinique 3 Martinique 3 Martinique 3 Martinique 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Cayman 1 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Cayman 2 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Cuba 2 Cuba 2 Cuba 2 Cuba 2 Cuba 1 Total 50 48 46 2 21	Bahamas	_	3 🔴	•	•			No.			1		
Bonaire, Saint Eustati       3       3       6       6       6       6       6       7<	Barbados	_	3 🔴	•	•			No.			12		
British Virgin Islands Gayman Island	Bonaire, Saint Eustati	_	3 🔴	•	•				-	section (		and a second	
Cayman Islands 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	British Virgin Islands	_	3 🔴	•	•					( L	in a l		
Curacao 3 Dominica 3 Grenada 3 Grenada 3 Jamaica 3 Jamaica 3 Jamaica 3 Saint Barthelemy 3 Saint Barthelemy 3 Saint Martin 3 Saint Martin 3 Saint Martin 3 Saint Vincent and the. Saint Karten 3 United States Virgin L Saint Kitts and Nevis 2 Cuba 3 Cuba 4 Cuba 3 Cuba 4 Cuba 4	Cayman Islands	_	3	•	•				· · · ·		Sec. 1		
Deminica     3     Checked     <	Curacao	_	3						2	1 - C	teres the second	and the second s	
Genada 3 Guadeloupe 3 Jamaica 3 Puerto Rico 3 Saint Martínique 3 Puerto Rico 3 Saint Martíni 3 Saint Martíni 3 Saint Martín 3 Saint M	Dominica	_	3		-					Car.	1.000	Sigilar Internet	
Greinada Jamaica Ja	Comada	_								And a state of the	Trees, person	Tabula and Solar	
Gradewald by a second s	Grenaua	_								and the second second	~	and the second second	
Jamara 3 Jamara 3 Puerto Rico 3 Saint Martinigue 3 Saint Martinigue 3 Saint Martin 3 Saint Martin 3 Saint Marten 3 Sint Maarten 3 United States Virgin L. Bermuda 2 Cuba 2	Guadeloupe	_									A REAL PROPERTY.	and the second	-10 C
Martangué 3 Saint Barthelemy 3 Saint Martin 3 Saint Vincent and the. 3 Saint Vincent and the. 3 Saint Vincent and the. 3 Saint Vincent and the. 3 United States Virgin L 3 Bermuda 2 Cuba 2 Cuba 2 Cuba 2 Cuba 2 Chile 1 Total 50 48 46 2 21	Jamaica		1							1.00	Anna 2	-	1000
Puerto Rico 3 Saint Barthelemy 3 Saint Marten 3 Saint Vincent and the 3 United States Virgin L. 3 Bermuda 2 Cuba 2 C	Martinique		3 🔴	•	•						1000		States of the local division of the local di
Saint Barthelemy 3 Saint Martin 3 Saint Vincent and the 3 Sint Maarten 3 Sint Maarten 3 United States Virgin L. Bermuda 2 Cuba 2 Cu	Puerto Rico		3 🔴	•	•					1			
Saint Martin 3 Saint Vincent and the. 3 Saint Vincent and the. 3 Turks and Caicos Isla. 3 United States Virgin L Bermuda 2 Cuba Cuba 2 Cuba 3 Cuba 2 Cuba 2 Cuba 3 Cuba 2 Cuba 3 Cuba 3 Cuba 2 Cuba 3 Cuba Cuba 3 Cuba	Saint Barthelemy		3 🔴	•	•						1.70		
Saint Vincent and the 3 Saint Vincent and the 3 Sint Maarten 3 Turks and Caicos Isla. 3 United States Virgin I. 3 Cuba 2 C	Saint Martin		3 🔴	•	•						Co.		
Sint Maarten 3 Turks and Gaicos Isla. 3 United States Virgin L. 3 Bermuda 2 Guba 2 Guba 2 Onterrat 2 Oruguay 2 Chile 1 Total 50 48 46 7 21 Humber of VBD presence	Saint Vincent and the	<b>[</b>	3 🔴	•	•							Contraction of the local division of the loc	
Turks and Caicos Isla	Sint Maarten		3 🔴	•	•							and the second second	
United States Virgin L. Bermuda 2 Cuba Cuba 2 Cuba Cuba 2 Cuba Cuba 2 Cuba	Turks and Caicos Isla		3									and the second se	0
Bermuda Cuba Cuba Cuba 2 Montserrat 2 Saint Kitts and Nevis 2 Chile 1 Total Cuba Cuba 2 Cuba	United States Virgin I		3	-	-							1	-
Cuba Cuba Cuba Montserrat Saint Kitts and Nevis 2 Chile 1 Total Chile 1 Sol 48 46 3 21 Kumber of VBD presence	Bernuda			-	-							Andrew Andrew	
Cuba Montserrat Saint Kitts and Nevis Uruguay Chile 1 Total 50 48 46 2 21 Humber of VDD presence	Cuba			-								-	
Antoniserrat 2 Saint Kitts and Nevis 2 Uruguay 2 Chile 1 Total 50 48 46 7 21 Humber of VBD presence	Coba			-	-								
Saint Kitts and Nevis 2 Uruguay 2 Chile 1 Total 50 48 46 1 21	Montserrat		<b>•</b>								1	100	
Uruguay 2 Chile 1 Total 50 48 46 2 21	Saint Kitts and Nevis		2 🔴	•								5	
Chile 1 Total 50 48 46 5 21 Number of VSD preservce	Uruguay		2 🔴								1	S	
Total 50 48 46 21 Number of VBD preserves	Chile		1									60 - C	
Kumber at VBD pressree	Total		•	50 🔴 48	• •	16 😐 👘	2	1			100		
				-	-			Kumber	of With presserve	-0			
								and the second se					

Communicable Diseases and Health Analysis (CHA) \ Neglected, Tropical and Vector Borne Diseases (VT) & Epidemic Alert and Response, and Water Borne Diseases (IR) Data sources: PAHO-CHA-CD Annual country reports to PAHO. Country on Termory reporting VT in the Annericas between 2000 -2116 <u>thro//www.paho.org/od</u>, \PAHO-CHA-IR: Epidemic Alert and Response, and Water Born Diseases (IR) Reports from Member States IHR NEPs and/or through Member States websites 2000-2016 <u>thro//www.paho.org/od</u>, \PAHO-CHA-IR: Epidemic Alert and Response, and Water Born Diseases (IR) Reports from Member States IHR NEPs and/or through Member States websites 2000-2016 <u>thro//www.paho.org/od</u>, \PAHO-CHA-IR: Epidemic Alert and Response, and Water Born Diseases (IR) Reports from Member States IHR NEPs and/or through Member States websites 2000-2016 <u>thro//www.paho.org/od</u>, \PAHO-CHA-IR: Epidemic Alert and Response, and Water Born Diseases (IR) Reports from Member States IHR NEPs and/or through Member States websites 2000-2016 <u>thro//www.paho.org/od</u>, \PAHO-CHA-IR: Epidemic Alert and Response, and Water Born Diseases (IR) Reports from Member States IHR NEPs and/or through Member States websites 2000-2016 <u>thro//www.paho.org/od</u>, \PAHO-CHA-IR: Epidemic Alert and Response, and Water Born Diseases (IR) Reports from Member States IHR NEPs and/or through Member States websites 2000-2016 <u>through Member States</u> (IR) Interactive report produced by: PAHO/CHAIR

Americas

#### **Vector-Borne Diseases & Integrated Vector Management**

#### **CD55.R7 – PAHO/WHO 2016** Organización Organización Panamericana Mundial de la Salud de la Salud - Américas 55.° CONSEJO DIRECTIVO 68.º SESIÓN DEL COMITÉ REGIONAL DE LA OMS PARA LAS AMÉRICAS Washington, D.C., EUA, del 26 al 30 de septiembre del 2016 CD55.R7 Original: inglés RESOLUCIÓN CD55.R7 PLAN DE ACCIÓN PARA LA ELIMINACIÓN DE LA MALARIA 2016-2020 PLAN DE ACCIÓN PARA LA ELIMINACIÓN DE LA MALARIA 2016-2020 CD55.R9 – PAHO/WHO 2016 Organización Organización Pañamericana de la Salud Mundial de la Salud Ambricas 55.° CONSEJO DIRECTIVO 68." SESIÓN DEL COMITÉ REGIONAL DE LA OMS PARA LAS AMÉRICAS Washington, D.C., EUA, del 26 al 30 de septiembre del 2016 CD55 R9 Original: ingles RESOLUCIÓN CD55.R9 PLAN DE ACCIÓN PARA LA ELIMINACIÓN DE LAS ENFERMEDADES INFECCIOSAS DESATENDIDAS Y LAS MEDIDAS POSTERIORES A LA ELIMINACIÓN 2016-2022

PLAN DE ACCIÓN PARA LA ELIMINACIÓN DE LAS EID Y LAS MEDIDAS POSTERIORES A LA **ELIMINACIÓN 2016-2022** 

#### **CD55.R6 – PAHO/WHO2016**



Organización Mundial de la Salud - Américas

#### 55.° CONSEJO DIRECTIVO

68.º SESIÓN DEL COMITÉ REGIONAL DE LA OMS PARA LAS AMÉRICAS

Washington, D.C., EUA, del 26 al 30 de septiembre del 2016

CD55.R6 Original: español

RESOLUCIÓN

CD55.R6

ESTRATEGIA PARA LA PREVENCIÓN Y EL CONTROL DE LAS ENFERMEDADES ARBOVIRALES

ESTRATEGIA PARA LA PREVENCIÓN Y EL CONTROL DE LAS ENFERMEDADES ARBOVIRALES

#### CD48.R8 – PAHO/WHO 2008



ORGANIZACIÓN PANAMERICANA DE LA SALUD ORGANIZACIÓN MUNDIAL DE LA SALUD



48.º CONSEJO DIRECTIVO 60.3 SESIÓN DEL COMITÉ REGIONAL

Washington, D.C., EUA, del 29 de septiembre al 3 de octubre del 2008

CD48.R8 (Esp.) ORIGINAL: INOLÉS

RESOLUCIÓN

CD48.R8

EL CONTROL INTEGRADO DE VECTORES: UNA RESPUESTA INTEGRAL A LAS ENFERMEDADES DE TRANSMISIÓN VECTORIAL

El control Integrado de vectores: Una respuesta integral a las enfermedades de transmisión vectorial

## Integrated Vector Managmente (IVM)



RGANIZACIÓN PANAMERICANA DE LA SALUD ORGANIZACIÓN MUNDIAL DE LA SALUE



8.º CONSEJO DIRECTIVO <sup>4</sup> SESIÓN DEL COMITÉ REGIONAL

Washington, D.C., EUA, del 29 de septiembre al 3 de octubre del 2008

CD48.R8 (Esp.) **ORIONAL: INOLÉS** 

RESOLUCIÓN

CD48.R8

#### EL CONTROL INTEGRADO DE VECTORES: UNA RESPUESTA INTEGRAL A LAS ENFERMEDADES DE TRANSMISIÓN VECTORIAL

#### EL 48.º CONSEJO DIRECTIVO.

Habiendo examinado el informe de la Directora. El control integrado de vectores: una respuesta integral a las enfermedades de transmisión vectorial (documento CD48/13), en el cual se propone que los Estados Miembros aborden áreas comunes de trabajo para combatir las enfermedades de transmisión vectorial mediante el fortalecimiento de la capacidad nacional para lograr la óptima utilización de los recursos destinados a esta finalidad a fin de mejorar la eficacia y la eficiencia de los programas nacionales de control de vectores;

#### **Key elements of IVM**

- **1.** Advocacy, social mobilization and legislation.
- 2. Colaboration within the health sector and with other sectors.
- 3. Integrated approach (non chemical and chemical).
- 4. Evidence- based decision making.
- 5. Capacity building.



## Vector Borne Diseases today: what has changed?

- Increasing the risk of spreading vector-borne diseases (VBD) requires strengthening international, intersectoral and interdisciplinary coordination.
- The efforts of the **Countries**, **PAHO**, **WHO** and other partners to strengthen the integrated analysis of the entomological and epidemiological information for decision making.
- The importance of the implementation of Integrated Vector Management (IVM) to reduce the risk of transmission of VBD.





### **Regional Program of Public Health Entomology and Vector Control**

#### **Technical Advisor Group**

Priorities of the Regional Program of Public Health Entomology and Vector Control de la PAHO/WHO

Strengthening the Practice of the Entomology in Public Health Review, update and implement Integrated Vector Management (IVM) Establish a surveillance and management system for insecticide resistance



#### **ONGOING PROGRESS (I)**



- Review, update and adaptation of IVM:
  - Development of new operational
    - guidelines adapted for the
    - Americas
  - Validation of guidelines contents
    - with specialists and professionals

from the countries



#### **ONGOING PROGRESS (II)**



Trained human resources and the community:

- Trained expert groups updated to provide technical support as required by countries (entomology and vector control).
- Training in the rational use of insecticides and equipment for the application of insecticides – UNESP/NECE
- Mosquito Awareness Week, 2016-2018



#### Mosquito Awareness Week, 2016-2018

4



f У 🗇 in 👗 🖬 🔊 English Español

ogle Custo

Temas | Programas | Prensa | Publicaciones | Datos | Países y Centros | Cuerpos Directivos | Acerca de OPS

#### SEMANA DE ACCIÓN CONTRA LOS MOSQUITOS



https://www.paho.org/maw



#### Mosquito Awareness Week, 2016-2018







Panamá



Chile



#### **ONGOING PROGRESS (III)**

• Establishment of the regional network of monitoring and management of resistance to insecticides.

#### Participant countries:

Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, French Guyana, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Suriname and Uruguay

- Manual of procedures for the evaluation of resistance to Insecticides used in public health.
  - Elaboration of national plans for the monitoring and management of insecticide resistance (9 countries)





Artualmente el control de los vectores de importancia en salud pública: tiene como modelo teórico y práctico el-Manejo Integrado de Vectores (MIV), éste es un proceso de toma: de decisiones, para comitar el uso de los recursos: utilizados: en el control de vectores; principalmente de los insectidos: E-logicito de MIV-es contribuir al-logro de las metas mundales relativas al-

In Is luch contra los vectores La Organización Mundial le la Salud ha desarrollado una base de datos (World Alaria Report, social") para la recollación del sistas de uceptibilidad de los vectores de malaría en países indentos, sali mano, con la conformación del Teórnical kavisory Group on Public Health Entomology (TAG PHE) e priorizan las recomendaciones sobre la vigilancia de la elistoria, saliardo la la formación con espeneera obre

MONITOREO Y CONTROL DE LA RESISTENCIA A LOS INSECTICIDAS EN LAS POBLACIONES DE MOSQUITOS AEDES

> Orientación provisional para entomólogos

> > OHER COMMENT



#### **ONGOING PROGRESS (IV)**

VIDEO 1

## Protection and security before, during, and after insecticide use

DOWNLOAD





Protección y Seguridad Antes, Durante y Después de la aplicación de Insecticidas

DESCARGAR













#### **ONGOING PROGRESS (V)**

- Implementation of Good Laboratory Practices (GLP) using global standards through reference laboratories in the Americas, including FIOCRUZ (BRA), CIPEIN (ARG), U. Autónoma de Yucatán (MEX) and the Regional Center on Public Health Research/National Institute of Public Health of Tapachula, in Chiapas (MEX).
- Transfer of technology for the production of insecticide-impregnated papers in CIPEIN and FIOCRUZ. In coordination with WHO and the University of Sains in Malaysia.

	Wor Orga	Id Health anization of test site (WHO & IVCC)	es	Œ		C		
	Region	Cur Site	rrent te Pro	estin duct	g cap s	P P	ilit has	ies ses
to lead	West Africa	Institut Pierre Richet, Institut National de Santé Publique, Cote d'Ivoire Institut de Recherche en Sciences de la Santé, Centre Muraz, Bukina Faso CREC, Cotonou (in collaboration with LSHTM), Benin Centre Suisse de Recherches Scientifiques en Cote d'Ivoire, Cote d'Ivoire	LLIN LLIN LLIN LLIN	IRS IRS IRS		1 1 1	2 2 2 2	3 3 3 3
NCC NCC	East Africa	Kilimanjaro Christian Medical University College, Moshi, Tanzania Ifakara Health Institute, Bagamayo, Tanzania National Institute for Medical Research, Muheza, Tanzania		IRS IRS		1	2	3
	Western Pacific	Vector Control Research Unit, USM, Penang, Malaysia Institute for Medical Research, Kuala Lumpur, Malaysia Centre for Disease Control, Beijing, China		SS SS SS	Larv Larv Larv		2 2 2	3 3 3
to lead	South East Asia	WHO CC - National Institute of Malaria Research, Delhi, India WHO CC - Vector Control Research Centre, Puducherry, India	LLIN LLIN	IRS IRS	Larv Larv	1	2 2	3 3
OHM	Ameri cas	Oswaldo Cruz Foundation, Fiocruz, Rio de Janeiro, Brazil Centro Regional de Investigación en Salud Pública, Tapachula, Mexico Universidad Autonoma de Yucatan, Merida, Yucatan, Mexico Centro de Investigaciones de Plagas e Insecticidas. Buenos Aires, Argentina						
	Europ	IRD, Montpellier, France	LLIN S	IS IR	3 Larv	1		



World Heal Organizatio

#### **ONGOING PROGRESS (VI.a)**



Data sources: National Laboratory Focal Point, 2017. Report Production: PAHO Health Emergencies Department (PHE) Risk Assessment (HIM)

### Detection of virus in mosquitoes

References laboratories for entomo-virologic surveillance



(\*

Laboratories that had been implemented viral detection in mosquitoes





#### **ONGOING PROGRESS (VI.b)**

## **Training Workshops**

#### First workshop, Belen,Sep 2017

- •Argentina(INEHV),
- •Brasil( LACEN Bahia, Lacen FIOCRUZ Rio, IAL SP, IEC),
- •Mexico (InDRe, ISP),
- Nicaragua(CNDR),
- Panama( ICGES),
- Paraguay(SENEPA),
- Peru(INS)

Second workshop, Mexico, InDRe

•BOL,BLZ,COL, CHI,CRI,CUB,DOR, SLV, HON,GUT,HAI. Third Workshop, English Caribbean

#### •JAM,BAR,SUR,GUY,CARPHA



World Health Organization

#### **Early detection – Opportune Response**



#### PAHO supports pilot deployment of new technologies for the control of *Aedes spp* in Latin America and the Caribbean

PAHO has established a Group of experts (partners) on entomology, vector control, insecticide used in public health, entomological research, monitoring and evaluation, and epidemiology. Their main task is to provide technical cooperation to countries that request help to carry out pilot studies/tests on new vector control technologies recommended by WHO.

## New technologies: a) *Wolbachia* and b) mosquito genetic manipulation Technical cooperation aims to:

- Establish the <u>synergistic benefits</u> of using new technologies in combination with current and traditional <u>effective technologies</u> for vector control.
- Better document accurate evidence in support of the use of new technologies.
- Determine the <u>benefits and challenges</u> faced in the use of new technologies.



## Wolbachia: World Mosquito Program





 $\bigcirc$ 





Baseline studies for the large-scale release of mosquitoes with *Wolbachia* in Yucatan / Mexico

#### Main goal

- To design, build, equip and start-up a laboratory to produce *Aedes aegypti* mosquitoes with *Wolbachia* and to implement a strategy for biological control, to reduce mosquito populations and reduce the incidence of *Aedes*-borne diseases (DEN-CHIK-ZIK) in the state of Yucatan.
- Innovative method to complement the *Aedes aegypti* and ABD prevention/control programme.



Adapted from <u>Zhiyong Xi (</u>MSU). PAHO Evaluation Group meeting on *Aedes* 5<sup>th</sup> December 2017, Washington DC





PAHO Evaluation Group meeting on *Aedes* 5<sup>th</sup> December 2017, Washington DC





## OX513A Ae. aegypti



#### RESEARCH ARTICLE

Suppression of a Field Population of *Aedes aegypti* in Brazil by Sustained Release of Transgenic Male Mosquitoes





Adapted from Simon Warrner. PAHO Evaluation Group meeting on Aedes 5<sup>th</sup> December 2017, Washington DC



## 2014-2017

Brazil: CTNBio Approval, ANVISA announced they will issue a temporary registration

Pilot deployment under operational conditions Piracicaba project (65,000 people)



## Sterile Insect Technique (SIT): Current Projects

- **Caribbean:** Strengthening Regional Capacity in Latin America and the Caribbean for Integrated Vector Management Approaches with a Sterile Insect Technique Component, to Control *Aedes* Mosquitoes as Vectors of Human Pathogens, particularly Zika Virus.
- **Brazil:** Using the Sterile Insect Technique to Evaluate a Local Strain in the Control of *Aedes aegypti*
- **Cuba:** Demonstrating the Feasibility of the Sterile Insect Technique in the Control of Vectors and Pests
- Mexico: Using the Sterile Insect Technique to Control Dengue Vectors





## Mosquito-disseminated pyriproxyfen Brazil

#### **Field Sites**

- Amazonian Region (Two sites)
- Northeast, Center West and Southeast regions
- (Six sites in progress)

#### 

#### RESEARCH ARTICLE

Mosquito-Disseminated Insecticide for Citywide Vector Control and Its Potential to Block Arbovirus Epidemics: Entomological Observations and Modeling Results from Amazonian Brazil

Fernando Abad-Franch<sup>1,2</sup>\*, Elvira Zamora-Perea<sup>2</sup>, Sérgio L. B. Luz<sup>2</sup>

Adapted from Sergio Luz, FIOCRUZ. PAHO Evaluation Group meeting on *Aedes* 5<sup>th</sup> December 2017, Washington DC





**FIOCRUZ** 



### External evaluation group of new technologies



Dra Eugenia Grillet, **Central University of Venezuela** 



Dra Angela Harris, **CDC, Puerto Rico** 



Dra Linda Lloyd, **Independent Consultant**  Dr Fabiano Pimenta, **Belo Horizonte Municipality Health, Brazil** 

Dra Amy Morrison, **University of California** 

Dr Eduardo Massad, **Sao Paulo University** 

Dr Gonzalo Prokopec, **Emory University** 









Pan American Health Organization



#### **ONGOING PROGRESS (IX)**

#### Guía para la Evaluación de las estrategias innovadoras para el control de *Aedes aegypti*: desafíos para su introducción y evaluación del impacto

Elaborada por Héctor Gómez Dantés

**Colaboradores:** 

Mario Henry Rodríguez Angel Betanzos Reyes

Grupo de expertos asesores: Amy Morrison, Gonzalo Vázquez Prokopek, Angi Harris, Maria Eugenia Grillet, Fabiano Pimenta, Linda Lloyd

## Main Objective:

Support in the evaluation of the strengths and weaknesses of local control programs for the introduction, monitoring, impact evaluation, scaling and sustainability of new technologies.



Guía para la Evaluación de las estrategias innovadoras para el control de *Aedes aegypti*: desafíos para su introducción y evaluación del impacto

> Elaborada por Héctor Gómez Dantés

Colaboradores:

Mario Henry Rodríguez Angel Betanzos Reyes

Grupo de expertos asesores: Amy Morrison, Gonzalo Vázquez Prokopek, Angi Harris, Maria Eugenia Grillet, Fabiano Pimenta, Linda Lloyd

Listado de requerimientos para la adopción de las innovaciones tecnológicas

Infraestructura y programática	Estrategias	Estrategias
Contract Contract	Supresión	Reemplazo
	(reducir	(bloquear
2 m	vector)	transmisión
Antecedentes de uso de tecnologías similares para	Deseable	Opcional
control de pestes agricolas (TEI y otras)		
Marco regulatorio y legislativo para el uso de		
biotecnologías en salud		
Ambiental	Indispensable	Indispensable
Bioseguridad	Indispensable	Indispensable
• Bioetica	Indispensable	Indispensable
Protocolos para la producción masiva de	Indispensable	Indispensable
mosquitos manipulados	- market	
Portafolio de evidencias sobre seguridad, calidad y	Indispensable	Indispensable
eficacia del producto (dossier)		
Recomendación de la OPS por intermedio del	Opcional	Opcional
Programa Regional de Entomologia en salud		
Publica y Control de Vectores		
Grupo Asesor de Control de Vectores (VCAG)		
Convenios de colaboración con ministerios de	Indispensable	Indispensable
salud (federal, estatal y municipal) acorde al país	(Federal)	(Federal)
Plan de implementación		
<ul> <li>Fuentes de financiamiento aseguradas</li> </ul>	Indispensable	Indispensable
<ul> <li>Plan de financiamiento a largo plazo</li> </ul>	Deseable	Deseable
<ul> <li>Logística de insumos (producción,</li> </ul>	Indispensable	Indispensable
distribución, liberación, monitoreo y		
evaluación)		
Infraestructura física para producción de	Deseable	Deseable
MGM/MBW,	Indispensable	Deseable
<ul> <li>Insectario,</li> </ul>	Opcional	Indispensable
<ul> <li>Laboratorio (entomológico)</li> </ul>	Indispensable	Indispensable
<ul> <li>Recursos materiales para monitoreo</li> </ul>	Indispensable	indispensable
entomológico		
<ul> <li>Personal técnico capacitado asociado al</li> </ul>		
programa de control de vectores		
Grupo Científico Multidisciplinario de apoyo a	Deseable	Deseable
personal de control de vectores (investigación-		
acción)		
Sistema de vigilancia entomológica (capacidad	Indispensable	Deseable
para monitorear cambios espaciales, temporales y		
de impacto)		
Sistema de vigilancia epidemiológica (capacidad	Deseable	Indispensable
para monitorear cambios espaciales, temporales y		
de impacto incluida capacidad diagnóstica:		
serología, PCR, aislamiento)	and the second se	
Diagnóstico situacional basal (entomológico y	Deseable	Indispensable
epidemiológico) donde se implementarán las		
innovaciones		
Campaña de sensibilización y comunicación	Indispensable	Indispensable
estructurada (mensajes de impacto esperado)		
tomadores de decisiones,	Si	Si
personal técnicos,	Si	Si
<ul> <li>ONG's (grupos ambientales, sociedad civil)</li> </ul>	Si	Deseable
Medios de comunicación	Deseable	Deseable
Comunidades (grupos comunitarios		
formales y no formales	Si	Si
Acuerdos de participación con comunidades	Indispensable	Indispensable
involucradas (consentimiento informado) según		
país		

use and use Americas

#### **ONGOING PROGRESS (X)**



Meeting of the external evaluation group of New Technologies (EG) for the Aedes spp control 5th to 6th December 2017 Washington DC Objectives :

- Update the main pilot studies under development in the Americas.
- Discuss a operational assessment guide to evaluate pilot studies.
- Elaborate a schedule of technical visits in the countries.

www.paho.org/vectorcontrol



#### **ONGOING PROGRESS (XI)**

#### Control de vectores con posteridad a los desastres naturales

Guía re

Programa Regional de Entomología en Salud Pública y Control de Vectores

> Organización Panamericana de la Salud Organización Mundial de la Salud

Propuesta de construcción de escenarios operativos genéricos para el control del *Aedes <u>aegypti</u>* en la Región de las Américas.

Programa Regional de Entomología en Salud Pública y Control de Vectores

> Organización Panamericana de la Salud Organización Mundial de la Salud

Orientaciones para la estructuración de Laboratorios de Entomología en Salud Pública

Programa Regional de Entomología en Salud Pública y Control de Vectores

> Organización Panamericana de la Salud Organización Mundial de la Salud

#### MANUAL DE

PARA LA CAPACITACION DEL PERSONAL DE LOS PAISES EN LA PREVENCIÓN Y CONTROL INTEGRAL DE DENGUE EN EL CONTEXTO DE LA CIRCULACIÓN DE OTRAS ARBOVIROSIS





ization

Propuesta de construcción de escenarios operativos genéricos para el control del *Aedes <u>aegypti</u>* en la Región de las Américas.

Programa Regional de Entomología en Salud Pública y Control de Vectores

> Organización Panamericana de la Salud Organización Mundial de la Salud



#### DIAGNOSIS

ROBUST INFORMATION SYSTEM

entomological surveillance stratification adult mosquito populations (ovitraps o adult traps) & mosquito virus infection (PCR)

INTERVENTION according to the setting control activities are not universal



## New operational model for the **Control** of **Aedes aegypti** in the Americas

**FOUNDATION:** Early detection – Opportune Response

**Governance** *leadership* institutional development, discipline, **coordination** resources, training



Specialized vector control

selective insecticide application - indoor residual spraying (IRS) - space spray - other control activities options

#### (------

**Research** evaluation of new

technologies: surveillance & vector control

#### Monitoring & evaluation

- Surveillance
- interventions
- resistance

Promotion of vector control & risk communication

Institutional & family responsibility









## **Next steps**



#### Plan of Action on Entomology and Vector Control 2018-2023



#### 162nd SESSION OF THE EXECUTIVE COMMITTEE

Washington, D.C., USA, 18-22 June 2018

Provisional Agenda Item 4.9

CE162/XX 22 February 2018 Original: English

#### PLAN OF ACTION ON ENTOMOLOGY AND VECTOR CONTROL 2018-2023

#### Introduction

1. The objective of the Plan of Action on Entomology and Vector Control 2018-2023 is to strengthen regional and national capacity for the prevention and control of key vectors and reduce the transmission of vector-borne diseases (VBDs). The plan of action is aligned with resolutions, strategies, reports, and disease-specific plans of action of the Pan American Health Organization (PAHO) and the World Health Organization (WHO), as well as with the PAHO Strategic Plan 2014-2019 and the UN Sustainable Development Goals (1).

2. The plan of action is consistent with the structure and recommendations of the joint document on Global Vector Control Response 2017-2030 prepared by a steering





#### THANK YOU AND ACKNOWLEDGEMEN TO PARTNERS AND COUNTRIES OF THE AMERICAS







### OFICINA REGIONAL PARA LAS Américas

# Thank you! Muchas gracias!





Pan American Health Organization



World Health Organization

REGIONAL OFFICE FOR THE Americas

