

Improved water, sanitation and hygiene as part of an integrated vector management (IVM) framework

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Key vector borne diseases

- ❑ Malaria
- ❑ Dengue
- ❑ Lymphatic filariasis
- ❑ Japanese encephalitis



- ❑ Chagas disease



- ❑ Leishmaniasis



- ❑ Onchocerciasis



- ❑ Schistosomiasis



- ❑ Trachoma



Conventional vector control

- ❑ **Vertical ('top-down') structure**
- ❑ **Insecticide-based**
- ❑ **Focused on single diseases**
- ❑ **Example: Yellow fever eradication campaign of early 20th century**

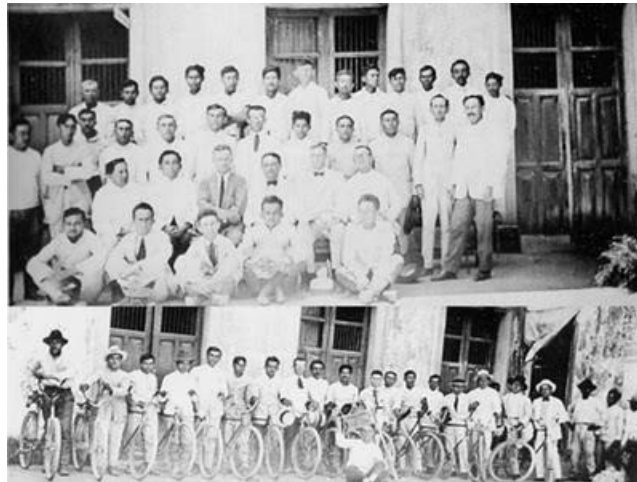


Photo: <http://enfeps.blogspot.com/2011/10/la-fiebre-amarilla-en-mexico.html>

IVM transforms the conventional system of vector control by making it more evidence based, integrated and participative.

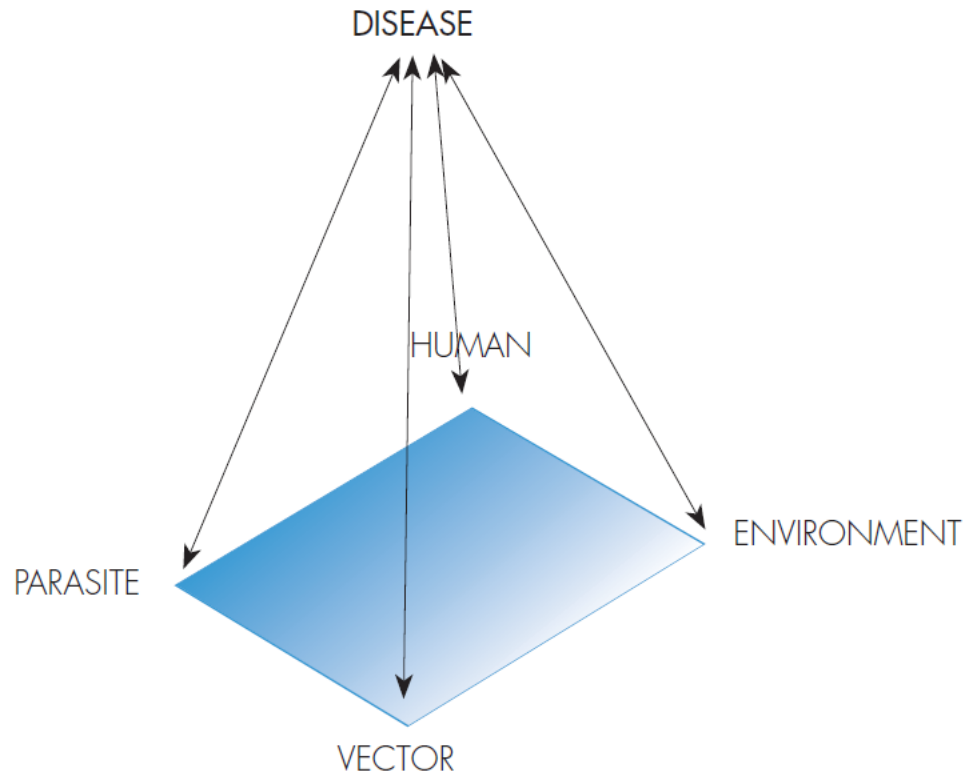
WHO definition:

- ❑ **Integrated vector management (IVM) is a rational decision-making process to optimize the use of resources for vector control.**

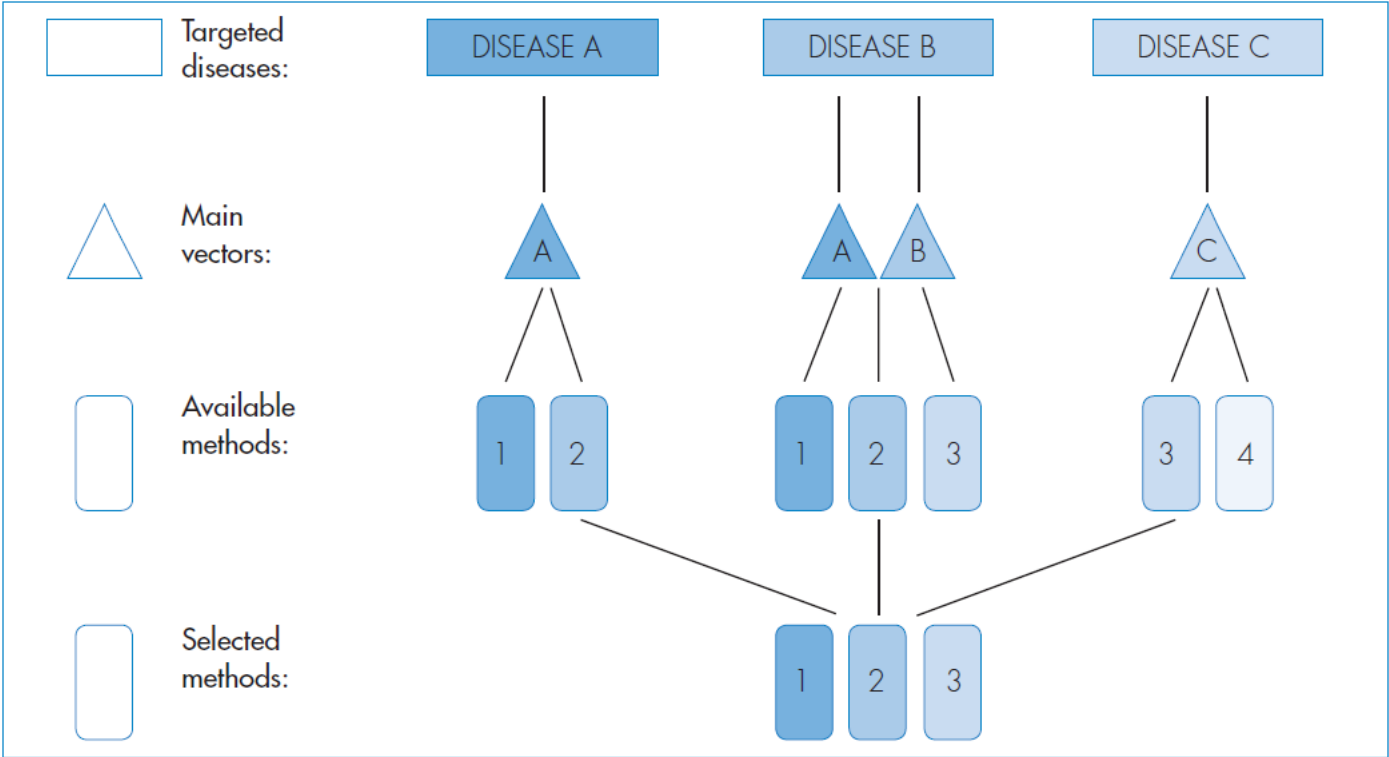
The principal aim of IVM:

- ❑ **To contribute to the achievement of the global targets set for vector-borne disease control, by making vector control more efficient, cost effective, ecologically sound and sustainable.**

Determinants of vector-borne disease



IVM approach



Vector Control Matrix

Category	Question	Chagas disease	Dengue	Trypanosomiasis	Jap.encephalitis	Leishmaniasis	lymphatic filariasis	Malaria	Onchocerciasis	Schistosomiasis	Trachoma
Environmental	Source reduction		+		+		+	+			
	Habitat manipulation						+	+		+	
	Irrigation management & design				+			+	+	+	
	Proximity of livestock				+			+			+
	Waste management						+				+
Mechanical	House improvement	+			+	+		+			
	Removal trapping		+	+		+					
	Polystyrene beads						+				
Biological	Natural enemy conservation		+		+			+		+	
	Biological larvicides		+		+		+	+	+		
	Fungi										
	Botanicals		+					+			
Chemical	Insecticide-treated bednets	+			+	+	+	+			
	Indoor residual spraying	+				+		+			
	Insecticidal treatment of habitat		+	+			+	+	+		
	Insecticide-treated targets			+							
	Biorational methods		+					+			
	Chemical repellents					+	+	+			

Key elements of IVM strategy

N° Element	Description
1. Advocacy, social mobilization and legislation	Promotion and embedding of IVM principles in designing policies in all relevant agencies, organizations and civil society; establishment or strengthening of regulatory and legislative controls for public health; empowerment of communities
2. Collaboration within the health sector and with other sectors	Consideration of all options for collaboration within and between public and private sectors; application of the principles of subsidiarity in planning and decision-making; strengthening channels of communication among policy-makers, vector-borne disease programme managers and other IVM partners
3. Integrated approach	Ensure rational use of available resources by addressing several diseases, integrating non-chemical and chemical vector control methods and integrating with other disease control methods
4. Evidence-based decision-making	Adaptation of strategies and interventions to local ecology, epidemiology and resources, guided by operational research and subject to routine monitoring and evaluation
5. Capacity-building	Provision of the essential material infrastructure, financial resources and human resources at national and local level to manage IVM strategies on the basis of a situational analysis

^a Source: Global strategic framework for integrated vector management (8).

Why?

- ❑ **Use of IVM helps vector control programmes to:**
 - Find and use more local evidence
 - Integrate interventions where appropriate
 - Collaborate within the health sector and with other sectors, as well as with households and communities

- ❑ **Hypothesis:**
 - By reorienting to IVM, vector control programmes will be better able to meet the growing challenges in controlling vector-borne diseases in the face of dwindling public sector human and financial resources.

What does IVM currently look like?

- ❑ **The focus of IVM has been largely on malaria-endemic countries in response to an increase of funding and political will in a context of:**
 - Decentralization of vector control services
 - Insufficient capacity and infrastructure
 - Lack of evidence-based vector control strategies
 - Little culture of intersectoral collaboration
- ❑ **Latin America and Southeast Asia are currently defining what IVM looks like in a context where malaria is not the most important vector borne disease**
 - Dengue is the vector borne disease of greatest public health importance

How to include water, sanitation, and hygiene in an IVM framework

- IVM has focused on the integration of the control of vector borne diseases, but there is space to move outside the vector borne disease 'box' and target commonalities based on functional relationships between disease systems
 - E.g., stored water as a risk factor for both dengue and diarrheal illness

Relationship between *Aedes aegypti* production and occurrence of *Escherichia coli* in domestic water storage containers in rural and sub-urban villages in Thailand and Laos

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Not just a vector-borne disease: Thinking of dengue in terms of being a water- related disease

- ❑ ***Aedes aegypti* mosquitoes breed in artificial containers in close proximity to human dwellings**
 - Lack of access to regular piped water supply leads to storage of water in containers in/around houses
- ❑ **Improperly managed stored water can potentially contribute to an increased risk of both dengue and diarrheal illness**
 - Frames both diseases in terms of a shared medium

The role of sanitation and hygiene

- ❑ **Ample evidence in the literature that dengue vectors often breed in unmanaged, rainwater filled containers**
 - Such as rubbish and other discarded items in/around homes
 - Unused tyres are especially attractive *Ae. aegypti* breeding sites
- ❑ **Many dengue-endemic areas lack routine rubbish collection and sewer systems**

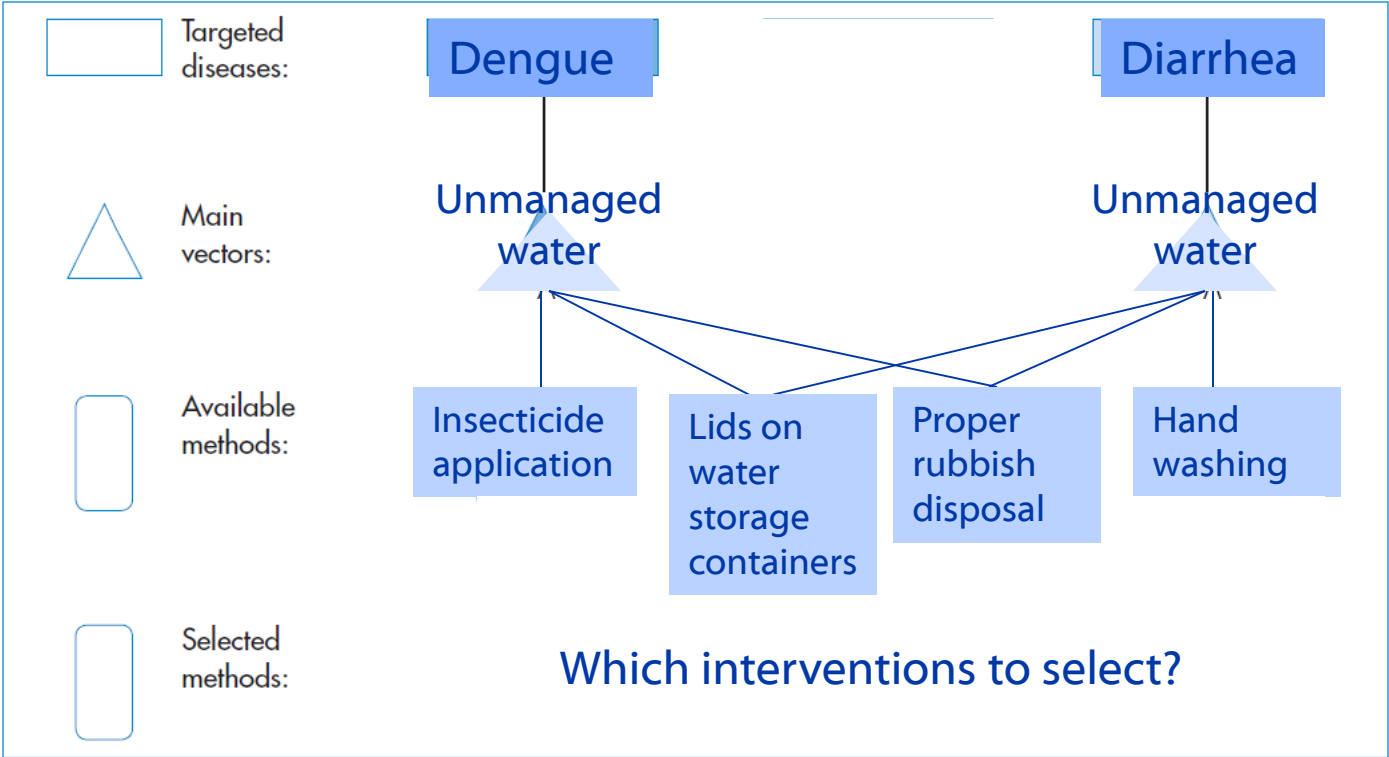


Including WASH in an IVM framework: Where to start?

N° Element	Description
1. Advocacy, social mobilization and legislation	Promotion and embedding of IVM principles in designing policies in all relevant agencies, organizations and civil society; establishment or strengthening of regulatory and legislative controls for public health; empowerment of communities
2. Collaboration within the health sector and with other sectors	Consideration of all options for collaboration within and between public and private sectors; application of the principles of subsidiarity in planning and decision-making; strengthening channels of communication among policy-makers, vector-borne disease programme managers and other IVM partners
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^a Source: Global strategic framework for integrated vector management (8).

IVM approach



Conclusions

- ❑ **There are exciting prospects for including WASH in IVM frameworks**
 - Particularly in areas where dengue is the primary vector borne disease of concern
- ❑ **Challenges exist**
 - Thinking outside the box of 'vector borne disease control'
 - Intersectoral collaborations
 - Monitoring and evaluation of outcomes
 - Building the evidence base for integrated control
 - Outcomes reported over the next 3 days are an important start

Thank you

Questions?