

Resumen del Plan Mundial para el Manejo de la Resistencia a Insecticidas en los Vectores de Malaria (GPIRM) y su aplicabilidad de acuerdo a la situacion de la region de las Americas

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Reunion Anual de AMI

11 de abril 2013

'GPIRM'

- Released in 2012
- Primarily focused on malaria vectors in Africa
- Executive summary has been translated into Spanish and French
- Developed through a broad-based consultation with over 130 stakeholders representing malaria endemic countries, multilateral agencies, development partners, academia, and industry

WHO GLOBAL MALARIA PROGRAMME

GLOBAL PLAN FOR INSECTICIDE RESISTANCE MANAGEMENT

IN MALARIA VECTORS



What are the recommendations of the GPIRM and how are they applicable to the Americas?

Divided into 4 parts

- ❑ **Part 1: *The threat of insecticide resistance***
 - Describes insecticide resistance is and why it is a concern for malaria control
 - Presents the available approaches to managing resistance
- ❑ **Part 2: *Collective strategy against insecticide resistance***
 - Outlines the activities necessary to preserve the effectiveness of malaria vector control
 - Insecticide resistance management must be a collective response involving multiple stakeholders
- ❑ **Part 3: *Technical recommendations for countries***
 - Outlines a framework for policy-making to manage insecticide resistance
 - Provides example scenarios with consensus recommendations
- ❑ **Part 4: *Near-term action plan***
 - Describes concrete activities for stakeholders in the short term

Part 1:

The threat of insecticide resistance

Why is insecticide resistance important?

- ❑ **Most experts consider that insecticide resistance will likely have significant operational impact if no preemptive action is taken**
 - Recent evidence from Africa suggests that insecticide resistance is associated with resurgence of malaria cases
- ❑ **The evolution of insecticide resistance is of great concern; we must act early, before resistance becomes stable in the vector populations.**
 - Recent evidence suggests that resistance can arise rapidly and focally; early detection and effective response can prevent resistance from becoming fixed in a population

Strategies for managing insecticide resistance

Figure 16: Potential applications of insecticide resistance management approaches for indoor residual spraying (IRS) and insecticide-treated nets (ITNs)

Potential approach	Use for IRS?	Use for ITNs?
<i>Rotations</i>	✓	
<i>Combination</i>	✓	✓
<i>Mosaics</i>	✓	
<i>Mixtures</i>	✓	✓

✓ *Currently available*

✓ *Products that could be developed*

Mosaics, use of alternative insecticides in different geographical areas

What does this mean for the Americas?

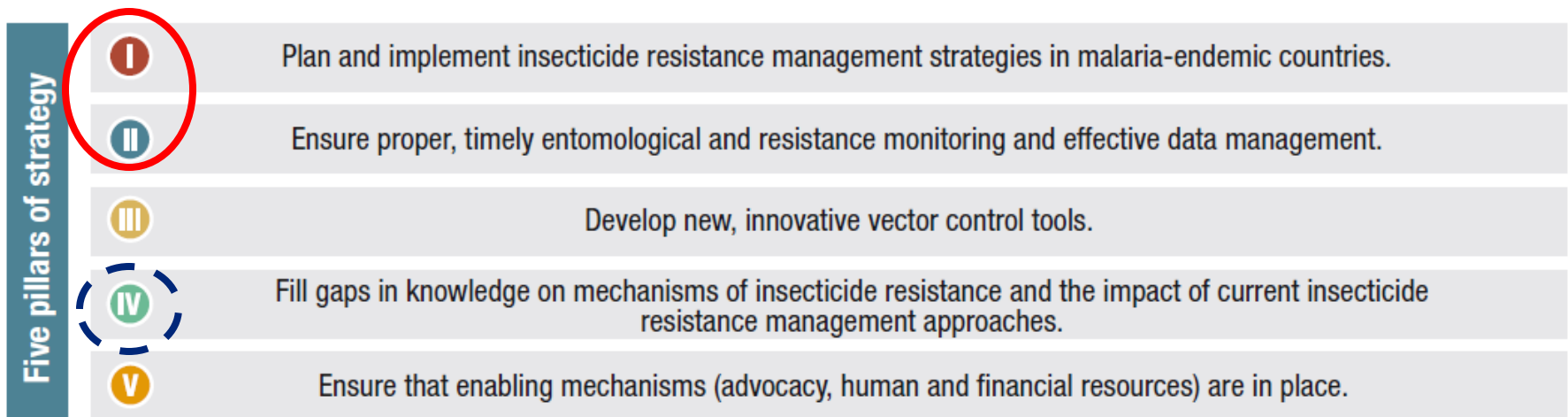
- ❑ **Nobody really knows... very little historical data**
- ❑ **Evidence from Colombia**
 - 2005-6: resistance to DDT and pyrethroids detected in *An. darlingi*
 - 2010: levels of susceptibility had recovered after switching to fenitrothion (organophosphate) for IRS
- ❑ **Research in Mexico on *An. albimanus***
 - Compared IRS with rotations, mosaics, and single type of insecticides
 - No conclusive evidence regarding which methodology was most effective at managing resistance
- ❑ **Others?**

Part 2:

Collective strategy against insecticide resistance

Strategy consists of 5 pillars

Figure 1: Five pillars of the Global Plan for Insecticide Resistance Management in malaria vectors



IR, insecticide resistance

What does this mean for the Americas?

- ❑ **Emphasizes the importance of routine monitoring of insecticide resistance**
- ❑ **Need to strengthen capacity for data management and interpretation**
- ❑ **'An aggregated global database should be created to provide global direction on IRM'**
 - Regional database for the Americas?
 - Participation in global resistance mapping initiatives: VecNet, IRBase, others?

Part 3:

Technical recommendations for countries

Scenarios for resistance management

Understand spread of insecticide resistance

Understand severity of insecticide resistance

Consider options for insecticide resistance management strategy

New resistance identified with bioassays at sentinel sites

Have enough sites been tested to give a clear picture of insecticide resistance? ^a

No

Conduct further bioassays at other sites to establish limits of geographical distribution of insecticide resistance

Yes

Which resistance mechanisms are present (and what is the strength of resistance)?

Parallel process to understand severity of insecticide resistance

Are there epidemiological data showing increase in number of malaria cases?

Yes

Of extreme concern if coupled with high resistance. Prepare to take emergency action.

No

Situation not yet critical. Urgency for action will depend on resistance mechanism/s identified.

kdr only
Unlikely to have significant operational impact in the short term, but IRM strategy needed and action where possible

Metabolic only
Of great concern, important to modify and implement IRM strategy

Metabolic and kdr
Of extreme concern, critical to modify and implement IRM strategy immediately

Refer to the recommendations in part 3 of the GPIRM, including details on selecting alternative insecticides predominantly on the basis of cross-resistance patterns.

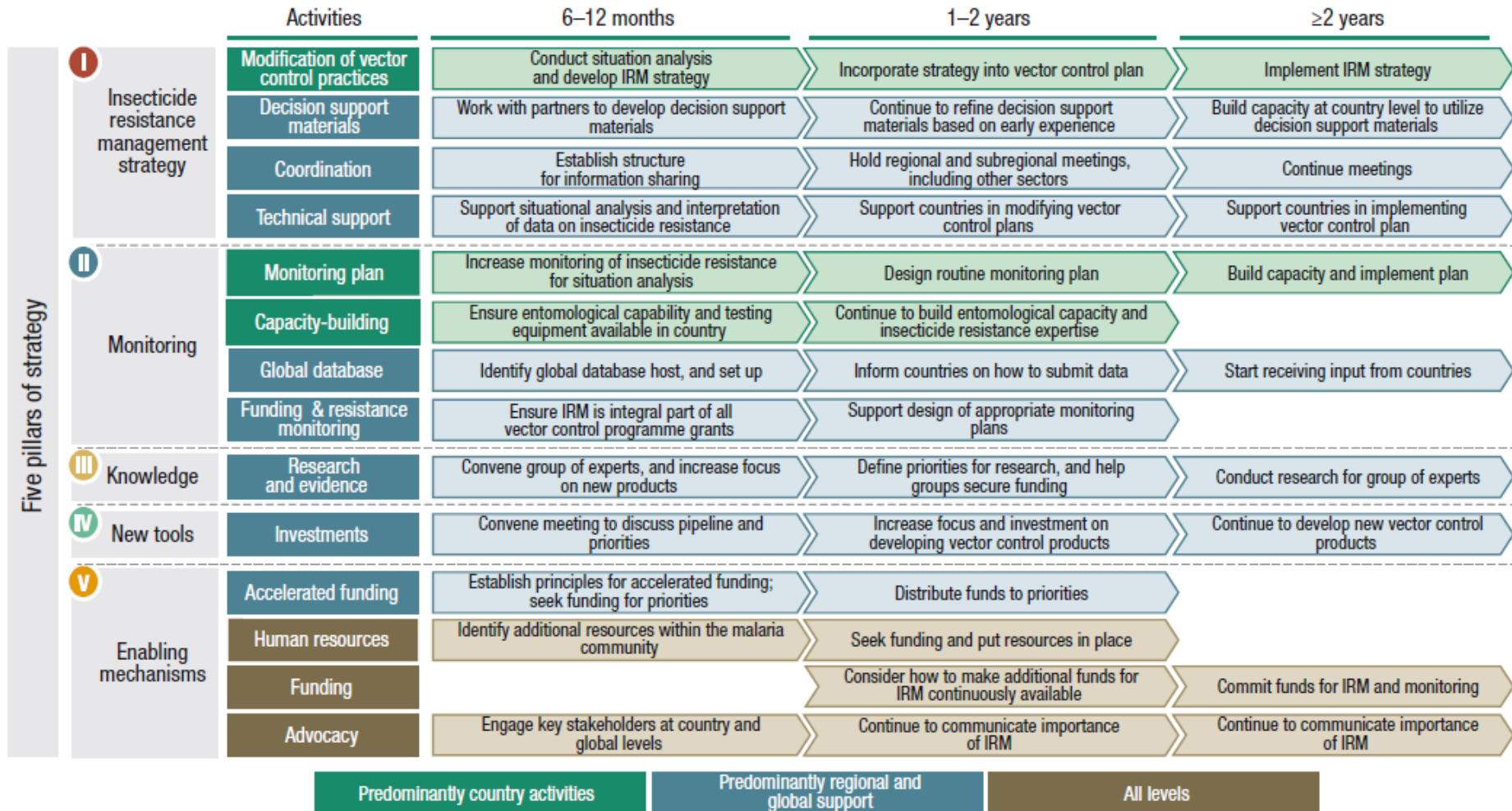
Part 4:

Near term action plan

Action plan

Figure 3: What should we do during the next 12 months and beyond?

Overview of activities required to implement the GPIRM in the near future



Roles of stakeholders

Figure 2: Main roles and responsibilities of each stakeholder group

	Global norms and guidelines	Designing IRM strategies	Implementation	Evaluating IRM strategy	Monitoring	Coordination of action / info	IR research	R&D	Ressource mobilization	Advocacy
NMCPs and other VBD programmes	✓	✓	✓	✓	✓	✓	✓		✓	✓
Senior government officials			✓			✓			✓	✓
Other health programmes and agricultural sector					✓	✓	✓			
Implementation agencies / NGOs		✓	✓	✓	✓	✓			✓	✓
WHO GMP	✓	✓	✓	✓	✓	✓	✓		✓	✓
WHO regional and country offices	✓	✓	✓	✓	✓	✓			✓	✓
Multilateral agencies		✓	✓						✓	✓
Funding agencies and bilateral donors					✓		✓	✓	✓	✓
WHOPES	✓			✓			✓	✓	✓	✓
Research Institutes and academia		✓		✓	✓		✓			✓
Manufacturers of VC products / PDPs				✓				✓	✓	✓

✓ Primary role ✓ Secondary role: support

NMCP, national malaria control programme; VBD, vector-borne disease; NGO, nongovernmental organization; GMP, Global Malaria Programme; WHOPES, WHO Pesticide Evaluation Scheme; VC, vector control; IRM, insecticide resistance management; IR, insecticide resistance; R&D, research and development; PDPs, Product Development Partnerships

What does this mean for the Americas?

- ❑ **Opportunities for integrated vector management (IVM)**
 - In most countries, dengue is the vector borne disease that receives the greatest attention (but also Chagas, leishmaniasis, others)
 - How to leverage limited entomology resources to optimize vector surveillance and control?
 - How to coordinate insecticide procurement/application?
- ❑ **Emphasizes the importance of coordination between sectors**
 - The use of agricultural pesticides can contribute to insecticide resistance, e.g. Peru
- ❑ **Collaboration with academic research groups**
 - Opportunities for operational research, i.e. characterization of insecticide resistance mechanisms

Full GPIRM document and executive summary in Spanish and French can be downloaded from:

http://www.who.int/malaria/vector_control/ivm/gpirm/en/

