Update on GPIRM Implementation: Progress, Challenges and the Way Forward

Malaria Policy Advisory Committee Meeting
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Vector Control Unit
Global Malaria Programme
Global Plan for Insecticide Resistance Management in malaria vectors (GPIRM): Five-Pillar Strategy

Short-term (~3 years)
Preserve susceptibility and slow the spread of resistance on the basis of current knowledge, and reinforce monitoring capability and activities

Medium-term (3–10 years)
Improve understanding of IR and tools to manage it, and adapt strategy for sustainable vector control accordingly

Long-term (≥10 years)
Use innovative approaches for sustainable vector control at global scale

Five pillars of strategy

I. Plan and implement insecticide resistance management strategies in malaria-endemic countries.

II. Ensure proper, timely entomological and resistance monitoring and effective data management.

III. Develop new, innovative vector control tools.

IV. Fill gaps in knowledge on mechanisms of insecticide resistance and the impact of current insecticide resistance management strategies.

V. Ensure that enabling mechanisms (advocacy, human and financial resources) are in place.

Source: WHO (2012) GPIRM
PILLAR I
Plan and implement IR management strategies (1)

- Insecticide resistance (IR) is spreading geographically and in intensity – especially to pyrethroids (PY)

- Current recommendation is universal coverage of at-risk populations with LLINs or IRS if appropriate. Focal IRS can be implemented with LLINs for resistance management purposes
  - IRS chemicals should be rotated (by mode of action) ideally on an annual basis. Non-PY IRS must be used where LLIN coverage high
  - Mosaics also recommended but are often impractical and difficult to implement. Mixtures not yet available for LLINs or IRS

- Many countries face challenges in adopting these recommendations mainly due to high cost of non-PYs
  - PY = USD2-3* (x 2), carbamate = USD11* (x 3), new organophosphate = USD24* (x 1) - although operational costs differ

- Use of more expensive non-PY IRS has resulted in overall reductions in IRS coverage (with IRS stopped in 2 countries)

* per sachet or equivalent
Many of the 30 countries that used PY for IRS did so in areas where there was high LLIN coverage (despite GPIRM)

Even when non-PY were used this was mostly due to detection of resistance rather than good management practice of rotation as part of long-term national strategy
PILLAR II. Enhance capacity for routine monitoring of insecticide resistance and data management (1)

- Key WHO document on procedures for IR monitoring was developed, translated and disseminated with good uptake
- Trainings conducted by WHO and partners to enhance capacity although difficult to document content, participants and outcomes
- Draft framework produced to guide systematic planning and budget of national IR monitoring and management plans for integration into NSPs. Will allow standardization across countries and assist with resource mobilization
PILLAR II. Enhance capacity for routine monitoring of insecticide resistance and data management (2)

- Global tracking system for IR data established with global, regional and national databases under development

![Diagram showing data collection forms and databases](image)

- Data collection forms
  - National DB
  - National DB
  - National DB
  - Regional DB
  - Global DB

- Automated data summary for verification
- Detailed reports/maps of subnational data
- Automated national profiles
- Regional summary reports
- Interactive global map of national data
- World Malaria Report
PILLAR III
Development and deployment of new tools (1)

- New interventions are needed to address IR - and residual transmission
- Work in this area has been led by the Product Development Partnership of the Innovative Vector Control Consortium and industry
- Vector Control Advisory Group (VCAG) was established by MPAC to review new paradigms/tools/technologies
  - Shorten the process to get products to end users
- Challenge: How do we prepare countries for rapid and appropriate deployment of new tools?
PILLAR III
Development and deployment of new tools (2)

IRS

- New long-lasting IRS formulations
  – 2 available (1 PY and 1 non-PY)

- Other non-PY IRS formulations
  – available in 12 - 24 months

LLINs

- First generation LLINs (PY+PBO) with enhanced efficacy but not IR management tools
  – 2 available

- New generation LLINs (multi-insecticides) as true IR management tools
  – several currently in early stage of development, availability forecast 2017 onwards

- Portfolio of novel products - established and expected in 2022
Resistance mechanisms

- Understanding mechanisms (especially metabolic) is key to managing IR but identification of metabolic pathways is very complex
- Progress made in reducing the time taken to assess mechanisms – from 6-12 months to a few weeks
- But most malaria endemic countries lack necessary equipment and expertise
  - Need to establish country/regional reference centres of excellence
  - Need to support trained scientists from malaria-endemic countries with necessary resources to apply their skills
Impact of resistance on malaria transmission

- While understanding this is essential, it is a difficult task
- Evaluations to date have given differing results
  - How do you design a study that takes into account multiple confounders when resistance is not randomly distributed?
- On-going 5-country project and emerging evidence from Sudan suggest that IR does have an impact on the effectiveness of vector control and hence malaria transmission
PILLAR V
Advocacy for resources to implement GPIRM

- GPIRM launch brought together high-level representatives each of whom made strong statements in support of GPIRM
- Document was translated and widely disseminated
- However, cost of PY alternatives has been one of the limiting factors to managing IR as recommended in GPIRM
- Discussions on price concessions not very successful mainly due to inherent problems in forecasting market demand
- Major priority to maintain traditional funding whilst accounting for GPIRM. Resource mobilization efforts led by WHO and CDC to target non-traditional donors not successful
  - Support for country-driven activities (eg. to collect, analyse, manage and share entomological data including on IR) is especially poor
Call to action

- Preserving the effectiveness of available products and tools is not an option but an imperative → universal access
- We should not wait until we see increase in malaria cases due to IR
- Rotational IRS will remain key to managing IR until we have multi-insecticide LLINs (or mixtures for IRS)
- It is unacceptable to witness a decline in the proportion of population protected or to be unable to conduct resistance management as a result of costly PY alternatives
- Global inaction will essentially deprive affected communities of their basic right of universal access to effective malaria prevention
Thank you!