IVM and innovation to combat resistance: Need for Operations Research in IVM and Insecticide Resistance

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Vector control is a major means of interrupting malaria control transmission.
Major threats to effective Malaria vector control

- Non-attainment of universal coverage of LLINs.
- Low utilization of LLINs
- Lack of proper baseline entomological indices prior to LLINs and IRS implementation.
- Limited capacity regarding IRS implementation
- Poor infrastructure (e.g. storage facilities) to support IRS commodities and activities.
- Inadequate infrastructure for effective and routine entomological and insecticide resistance monitoring
- Deployment of inappropriate interventions.
- Development of insecticide resistance
Innovations to tackle resistance: GPIRM

- The need for strategic research to address IR is addressed in the WHO Global Plan for Insecticide resistance management.
- IRM strategies should be based on current vector control interventions, the status of insecticide resistance and epidemiological context.
- Evidence based Research is the most important tool to tackle insecticide resistance
### 5 pillars of the GPIRM

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<th>Short-term (~3 years)</th>
<th>Medium-term (3–10 years)</th>
<th>Long-term (≥10 years)</th>
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<td>Preserve susceptibility and slow the spread of resistance on the basis of current knowledge, and reinforce monitoring capability and activities.</td>
<td>Improve understanding of IR and tools to manage it, and adapt strategy for sustainable vector control accordingly.</td>
<td>Use innovative approaches for sustainable vector control at global scale.</td>
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<th>Five pillars of strategy</th>
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<td>1. Plan and implement insecticide resistance management strategies in malaria-endemic countries.</td>
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<td>2. Ensure proper, timely entomological and resistance monitoring and effective data management.</td>
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<td>3. Develop new, innovative vector control tools.</td>
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<td>4. Fill gaps in knowledge on mechanisms of insecticide resistance and the impact of current insecticide resistance management strategies.</td>
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<td>5. Ensure that enabling mechanisms (advocacy, human and financial resources) are in place.</td>
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R&D for IVM innovation: GPIRM recommendations

- Establish baseline of IR and conduct comprehensive situation analysis
- Develop a National Insecticide Resistance Monitoring and Management Plans
- Build country capacity and expertise for designing monitoring plans, collecting, analyzing and interpreting vector surveillance data.
- Develop or use new active ingredients with different modes of action
- Mixtures of novel active insecticides to delay evolution of insecticides
- New non insecticide based vector control tools on the long term
- Priorities for research in the short, medium and long term
R&D for IVM innovation: GPIIRM recommendations

**Role of manufacturers of vector control products.**

- Invest in development and in bringing to market new products and vector control tools to support IRM.
- Work with partners to find ways to reduce the cost of insecticides and other vector control products to make IRM strategies more affordable.

**Role of research and academic institutions.**

- When needed, support national malaria control programmes in interpreting data and making decisions on an IRM strategy.
- With the national malaria control programmes, conduct trials and research to assess the effectiveness of IRM strategies for both maintaining effective vector control and reducing insecticide resistance.
- When needed, support national malaria control programmes in collecting data on and testing for insecticide resistance (particularly biochemical and molecular testing).
- Seek funding to conduct research on identified priorities and undertake this research together with national malaria control programmes.
Challenges for private sector involvement

- Limited funding for R&D
- Limited capacity for vector surveillance and entomological monitoring
- *Poorly* coordinated strategies for managing insecticide resistance
- “Value for money”
Opportunities for private sector involvement

- 2014-2020 NMSP clearly outline private sector strategies for IVM.
- Close collaboration with implementing partners, academic and research institutions
- NMEP and enabling environment for private sector involvement
- Introduction of new/innovative product through pilot schemes/implementation research
- Building capacity (technical and infrastructural) for entomological monitoring.
Conclusion

- IRM is a shared responsibility for all stakeholders
- The 2014-2020 NSP contained key strategies for Insecticide resistance management
- Urgency to develop Insecticide resistance Mapping and database in Nigeria.
- The 5 pillars of the WHO GPIIRM is hinged on operations research
- The private sector, academic and research institutions have specific roles to play in tackling IR for malaria vectors.
- We urgently need evidence from researches on IR to redesign malaria control/elimination strategies.