INTEGRATED VECTOR MANAGEMENT IMPLEMENTATION IN DISEASE-ENDEMIC AREAS TO REDUCE MOSQUITO POPULATION

AN EVIDENCE BRIEF FOR POLICY MAKERS AT NATIONAL/REGIONAL LEVEL

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ABSTRACT

Vector-borne diseases (VBDs) pose a significant burden to health systems. Traditional vector control activities using chemical methods do not prevent the spread of VBDs. Integrated vector management (IVM) is a promising approach in which other strategies are used in addition to chemical methods, such as environmental management with intersectoral collaboration and community participation.

The results show that implementing IVM in disease-endemic areas reduces vector breeding sites and the mosquito population. IVM can improve community abilities/capacities and empowerment, and its sustainability depends on implementing a cooperation framework and institutionalization along with community capacity building.

HIGHLIGHTS

- → **IVM lowers the entomology index and reduces breeding sites in urban settings; it also improves knowledge and empowerment regarding VBDs.**
- → **The main fundamentals for achieving IVM sustainability are building community capacity, intersectoral collaboration, and institutionalization of the intervention.**
- → **To improve the impact of IVM, the program must include a strong social mobilization component in addition to environmental management.**

INTRODUCTION

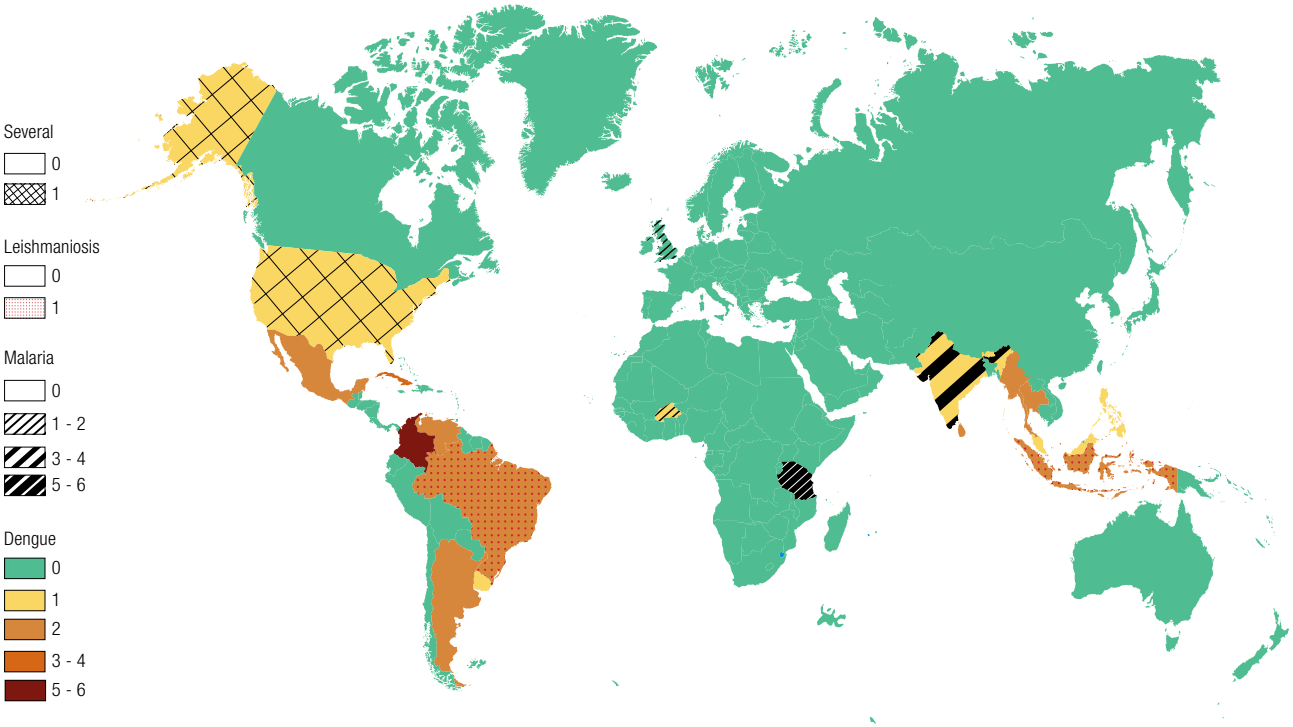
The control of vector-borne diseases (VBDs) is one of the greatest challenges on the global health agenda. Rapid and uncontrolled urbanization has heightened interest in addressing these challenges through an integrated vector management (IVM) approach.

IVM is a promising strategy; however, its impact and cost-effectiveness must be ensured. Likewise, achieving sustainability is one of the major current challenges in VBD control programs and must be guaranteed.

APPROACH

We conducted a systematic literature review to identify components relating to the impact, economic evaluation, and sustainability that may contribute to the integrated approach for preventing VBDs in urban settings. Most of the papers focused on dengue vectors, some concerned malaria, and a few referred to leishmaniosis. The studies reviewed covered regions all over the world, although more than half of them were conducted in the Americas.

Figure 1. Distribution of studies on disease concerned by countries



RESULTS

IMPACT

- IVM **reduces the mosquito population and breeding sites** in urban settings; however, more research is required to determine its impact on the prevention of VBDs. The results were heterogeneous but in all cases supported the intervention.
- Social outcomes of IVM were enhanced community abilities/capacities, empowerment, and knowledge.
- Higher impact depends on social mobilization to achieve long-lasting behaviors, environmental management with anticipation of the rainy season and impact assessment of entomological and clinical parameters, with guaranteed provision of basic sanitation services.

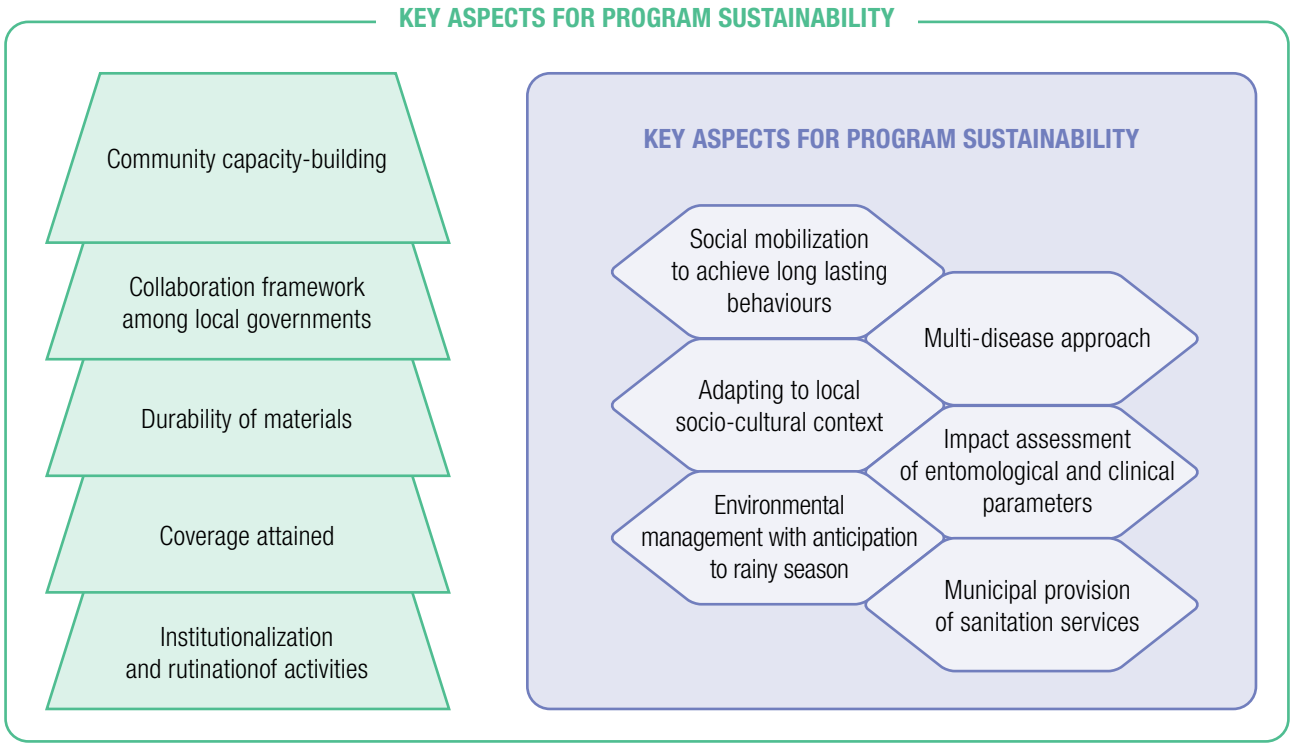
SUSTAINABILITY

- Interventions must focus specifically on building the capacity of the recipient community.
- Institutionalization must also be a key process for achieving sustainability, connected with conventional routinization activities.
- Sustainability will depend on multiple factors, key aspects being:
  - A collaboration framework among local government bodies.
  - The durability of the materials used for interventions.
  - The coverage attained.

ECONOMIC EVALUATION

- The studies provide evidence that IVM is cost-effective in endemic areas.

Figure 2. Integrated Vector Management



CONCLUSIONS

- → IVM reduces vector breeding sites and lowers the entomology index, but evidence of impact on health outcomes is limited.
- → IVM improves community abilities/capacities, empowerment and knowledge.
- → IVM represents a good 'value for money' alternative in cities with medium and high incidence of disease.
- → Community capacity building, intersectoral collaboration, and the institutionalization and routinization of activities are components of sustainability.
- → Findings indicate heterogeneity in the interventions performed and draw attention to the need to characterize interventions rigorously, in order to facilitate transferability between contexts.

RECOMMENDED SOURCES

The complete study report is available at:
https://idpjournal.biomedcentral.com/track/pdf/10.1186/s40249-018-0464-x

RECOMMENDATIONS

1st **Implement the IVM approach to reduce the mosquito population if your region is a VBD endemic region.**

2nd **Design the IVM intervention including environmental management with community capacity building.**

3rd **Engage the community in the design of the intervention to ensure social mobilization and long-lasting behaviors.**

4th **Adapt the intervention taking into account the local socio-cultural context and a multi-disease approach relating to IVM, including all prevalent VBDs.**

5th **Establish intersectoral collaboration to achieve sustainability through the institutionalization and routinization of activities.**

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