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**FRAMEWORK FOR THE IMPLEMENTATION OF THE GLOBAL VECTOR  
CONTROL RESPONSE IN THE WHO AFRICAN REGION**

**Report of the Secretariat**

**EXECUTIVE SUMMARY**

1. Vector-borne diseases (VBDs) are responsible for 17% of the global communicable disease burden and cause over 700 000 deaths per year. In response to the increasing challenge of VBDs and at the request of Member States, WHO has developed the Global vector control response 2017–2030 (GVCR), as a strategy to strengthen vector control worldwide.
2. The WHO African Region has a high burden of VBDs such as malaria, arboviruses and schistosomiasis. The World malaria report 2018 estimates that there were 219 million cases of malaria and 435 000 deaths in 2017, with 92% and 93% respectively occurring in Africa. Ten Member States reported an estimated 3.5 million more malaria cases compared to 2016. Arbovirus disease epidemics are on the increase in the Region. Over 440 million people remain at risk of yellow fever in Africa. Dengue fever is endemic in 29 Member States. Approximately 190 million people in Africa required schistosomiasis preventive treatment in 2016. Vector control efforts have faced various challenges including insecticide resistance, uncertain sustainability of interventions, and suboptimal surveillance and control. Others are climatic and environmental risk factors, poor partner collaboration and coordination, and lack of evidence for decision-making. Additional constraints include deficient emergency and epidemic response, limited human resources, and health system weaknesses.
3. The objective of the Regional framework is to guide countries in planning and implementing priority actions of the GVCR in the context of their local situations, particularly: (1) to strengthen institutional, infrastructural and human capacity, including basic and applied research; (2) to strengthen collaboration, community participation, integration of tools and approaches across diseases, and to enhance vector surveillance and monitoring and evaluation; and (3) to strengthen national policy formulation, leadership; advocacy, resource mobilization and partner coordination. The framework includes milestones for 2022 and 2025 and targets defined for 2019–2030. The Regional framework will be guided by principles that ensure effective and locally adaptive vector control systems for maximum and sustainable impact. The framework will facilitate attainment of the Thirteenth General Programme of Work outcomes, and the pertinent Sustainable Development Goals.
4. The Regional framework outlines national and regional priority interventions and actions associated with defined targets and progress indicators. Targets and indicators will guide realignment and strengthening of vector control and surveillance programmes. Consequently, they will also help to improve implementation and efficiency of VBD control activities for better sustainability of human resources and operations, greater impact and cost savings, to ultimately achieve the reduction of the disease-specific burden and threat.
5. The Regional Committee reviewed and adopted the framework.

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## **ABBREVIATIONS**

ANVR	African Network on Vector Resistance
CDC	Centers for Disease Control and Prevention
DENV	dengue virus
GVCR	Global vector control response
IDSR	Integrated disease surveillance and response
LLINs	long-lasting insecticidal nets
IRS	indoor residual spraying
IVM	integrated vector management
NTD	neglected tropical diseases
VBDs	vector-borne diseases
VCNA	Vector control needs assessment
WHO	World Health Organization
WHO AFRO	World Health Organization Regional Office for Africa
WMR	World malaria report

## INTRODUCTION

1. Vector-borne diseases (VBDs) constitute an increasing burden and sometimes cause disease outbreaks across WHO regions and present a risk for 80% of the world's population.<sup>1</sup> They account for 17% of the global communicable disease burden and over 700 000 deaths per year worldwide.<sup>2</sup>

2. In the WHO African Region, VBDs constitute a serious health concern with 90% of the global burden of malaria. Over 60 million people are at risk of human African trypanosomiasis annually with 10 700 cases and 6900 deaths. Yellow fever accounts for approximately 130 000 cases and 500 deaths annually. Over 11.7 million cases of schistosomiasis, 24 000 cases of visceral leishmaniasis, and on average 19 000 cases of cutaneous leishmaniasis have been reported annually<sup>3</sup> and 22 cases of guinea-worm disease since 2015. In addition, there are over 38 million cases of lymphatic filariasis, and about 15 million cases of onchocerciasis. The burden of arboviral diseases, particularly chikungunya, dengue, yellow fever and Zika virus disease is worrisome.

3. In response to the increasing threat of VBDs the World Health Assembly adopted the Global vector control response 2017–2030 (GVCR). The GVCR is a WHO strategy to strengthen vector control through increased capacity, improved surveillance, better coordination and integrated actions across sectors and diseases.

4. The Regional framework aims to guide countries in planning and implementing priority actions of the GVCR in the context of their local situations. The framework takes into consideration the regional challenges and priority activities that have been aligned with the recommendations of the Regional strategy for the management of environmental health 2017–2021,<sup>4</sup> and the recommendations of the 15th annual meeting of the African Network on Vector Resistance.<sup>5</sup> The success of the strategy requires realigning programmes to optimize the delivery of interventions that are tailored to the local context.

## CURRENT SITUATION

5. The Region has a high burden of communicable diseases attributable to VBDs such as malaria, arboviruses and schistosomiasis. The World malaria report 2018 estimates that there were 219 million cases of malaria<sup>6</sup> and 435 000 deaths in 2017, with 92% and 93% respectively occurring in Africa. The 10 Member States with the highest burden reported an estimated 3.5 million more malaria cases in 2017 compared to the previous year.

6. Occurrence and geographical spread of arbovirus disease epidemics such as yellow fever, dengue, chikungunya, and Zika virus disease are on the increase in the Region.<sup>7</sup> Considering the wide distribution of *Aedes aegypti* and its efficiency in transmitting several arboviruses, all Member States in the Region are at risk of arboviruses transmission. Over 440 million people remain at risk of yellow fever in the Region, despite the availability of a vaccine and improved surveillance and

<sup>1</sup> World Health Organization 2018. Schistosomiasis fact sheet.

<https://www.who.int/news-room/fact-sheets/detail/schistosomiasis>. (accessed March 5, 2019).

<sup>2</sup> A global brief on vector-borne diseases (WHO, 2014b). World Health Organization, WHO/DCO/WHD/2014.1.

[http://apps.who.int/iris/bitstream/10665/111008/1/WHO\\_DCO\\_WHD\\_2014.1\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/111008/1/WHO_DCO_WHD_2014.1_eng.pdf) (accessed March 5, 2019).

<sup>3</sup> Global Vector Control Response 2017–2030, WHO, 2017a.

<http://www.who.int/vector-control/publications/global-control-response/en/>(accessed March 5, 2019).

<sup>4</sup> Regional strategy for the management of environmental determinants of human health in the African region 2017–2021, WHO AFR/RC67/8, 13 June 2017, WHO-AFRO, 2017a.

<sup>5</sup> WHO 15th ANVR Annual Meeting in WHO-AFRO Report. 10-11 November 2017. Kintele, Congo. (WHO-AFRO/ANVR, 2017).

<sup>6</sup> World Malaria Report 2018. WHO-WMR, 2018. <https://www.who.int/malaria/publications/world-malaria-report-2018/en/> (accessed March 5, 2019).

<sup>7</sup> A Technical Report: Zika Virus Risk Assessment in the WHO African Region, WHO Regional Office for Africa. WHO-AFRO, 2016.

response capacities.<sup>8</sup> The 2016 yellow fever outbreak in Angola and the Democratic Republic of the Congo demonstrated the serious health risk posed by the disease.

7. Though the public health effect of dengue virus (DENV) is not clear in the Region, the disease is endemic in 29 Member States.<sup>9</sup> The combination of its wide distribution with rapid population growth, unplanned urbanization and increased international travel threatens to increase transmission of dengue in the coming years.

8. Estimates show that at least 206 million people required schistosomiasis preventive treatment in 2016 and it is estimated that at least 91.4% of that number lives in Africa. Other VBDs including trypanosomiasis, leishmaniasis, onchocerciasis, lymphatic filariasis, guinea-worm disease and plague also contribute to the heavy disease burden in Africa.

9. Though effective, the tools being used currently by vector control programmes (long-lasting insecticidal nets (LLINs), indoor residual spraying (IRS) of insecticide and larval control) have resulted in insufficient reduction of VBD transmission. Only a limited number of Member States in the Region have systematically controlled VBDs. Some Member States with multiple VBD control programmes that address different diseases work in isolation and with minimal coordination. In this regard, interventions have not been integrated for the control and elimination of VBDs. Even for malaria, the use of proven vector control methods remains suboptimal. For example, the proportion of households with sufficient LLINs (i.e. one net for every two people) remains inadequate, at 43% in 2016, while IRS coverage dropped from 80 million people at risk in 2010 to 45 million in 2016.

## ISSUES AND CHALLENGES

10. **Insecticide resistance:** The development of vector resistance to all the key classes of insecticides remains a constraint to effective vector control. This biological phenomenon could potentially reverse the gains made particularly for malaria control and elimination. Though efforts are underway, the underlying mechanisms are yet to be fully understood, and the impact of current resistance management approaches remains largely unknown.

11. **Residual malaria transmission:** Shifts in the behaviour of vectors to outdoor biting preclude the efficacy of contemporary indoor-targeting vector control tools and sustain residual transmission. The situation is further compounded by minimal understanding of behavioural attributes of local malaria vectors and the paucity of data on significance of secondary and exotic vectors.

12. **Sustainability of interventions:** Vector control interventions being harnessed for disease prevention by Member States have faced challenges of sustainability. The available logistical and technical capacity for deployment of interventions is largely donor-funded, with very minimal domestic resources. Existing efforts lack sustained collaboration between researchers, control services, communities and policy-makers.

13. **Environmental risk factors:** Rapid unplanned urbanization, changing land use patterns, climate change, increased international travel and conflicts continue to represent environmental risk factors that could propagate VBDs. Presently, risk factors to vector control are not being

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<sup>8</sup> Framework for implementing the global strategy to eliminate yellow fever epidemics (EYE), 2017–2026 in the African region, WHO AFR/RC67/8, 13 June 2017. WHO-AFRO, 2017b.

<sup>9</sup> Angola, Benin, Burkina Faso, Cabo Verde, Cameroon, Comoros, Côte d'Ivoire, Democratic Republic the Congo, Ethiopia, Equatorial Guinea, Eritrea, Gabon, Ghana, Kenya, Mali, Mauritius, Madagascar, Mozambique, Namibia, Nigeria, Rwanda, Seychelles, Senegal, Somalia, South Africa, United Republic of Tanzania, Togo, Uganda, Zambia.

adequately managed through an integrated approach to minimize their negative effects on health and economic development.

14. **Collaboration and coordination:** Current efforts to establish partnerships for integrated vector control and surveillance between the health and other sectors directly or indirectly concerned by VBDs remain minimal. National level coordination to harmonize methods and procedures for prevention, surveillance and control of VBDs is minimal across Member States. Equally, strong intersectoral collaboration to control the multifaceted VBD risk factors is suboptimal.

15. **Health system weaknesses:** The health systems in the Region are not well aligned with changing needs and many Member States are still unable to adequately invest in them. This issue impacts on the achievement of integrated vector control, surveillance and outbreak preparedness and response. Poor linkages between health systems and programme investments persist due to lack of integration. There are no national policies and no structural framework for integrating vector control and surveillance into the health system, resulting in inadequate resources for evidenced-based vector control activities.

16. **Vector surveillance and control:** The lack of appropriate baseline information and increasing environmental risks favouring the propagation of VBDs contribute to reduced efficiency in the implementation of vector control activities. Capabilities for entomological surveillance and vector control monitoring and evaluation are generally very limited in most Member States. Vector surveillance is currently not an integral part of integrated disease surveillance and response.<sup>10</sup>

17. **Evidence for decision-making:** There is limited knowledge and evidence-base for planning and implementation of integrated multi-disease vector control to support effective vector control and response in the African Region. This presents a challenge for efficient VBD control. Data generated from operational research and surveillance are not adequately harnessed for informing evidence-based integrated use of vector control interventions in a multi-disease approach.

18. **Human resources for vector control:** The African Region has the most severe health workforce shortage in the world.<sup>11</sup> This impacts implementation of vector control interventions including monitoring and containment of arboviral epidemics. Production, retention and training of human resources for health specifically for vector control remain a significant obstacle to the implementation of the Regional framework for vector control and response.

19. **Emergency and epidemic response:** Weak surveillance, monitoring and evaluation invariably compromise effective response and containment of epidemics by VBD control programmes.<sup>12</sup> Well-developed and up-to-date contingency plans, broadly disseminated, thoroughly understood and pre-tested with full involvement of relevant sectors and partners with clear roles and responsibilities are presently non-existent prior to epidemics.<sup>13</sup>

## THE REGIONAL IMPLEMENTATION FRAMEWORK

### Vision, Goal, Objective, Milestones and Targets

20. **Vision:** A Region free of vector-borne diseases.

<sup>10</sup> Technical guidelines for Integrated disease surveillance and response in the African Region (IDSR, 2nd Edition), WHO/CDC, 2010.

<http://www.who.int/csr/resources/publications/ebola/disease-surveillance-afro/en/> (accessed March 5, 2019).

<sup>11</sup> Road Map for Scaling Up the Human Resources for Health for Improved Health Service Delivery in the African Region 2012–2025. WHO Regional Office for Africa, Brazzaville, Congo. 2013.

<https://www.afro.who.int/sites/default/files/2017-06/road-map-hr.pdf> (accessed March 5, 2019).

<sup>12</sup> Mosquito (vector) control emergency response and preparedness for Zika virus. NTD-VCAG report Geneva March 2016. WHO-NTD, 2016.

<sup>13</sup> Global strategy for dengue prevention and control (2012–2020), WHO, 2012.

<http://www.who.int/denguecontrol/9789241504034/en/> (accessed March 5, 2019).

21. **Goal:** Ultimately reduce the burden and threat of vector-borne diseases in the African Region through effective, locally adapted and sustainable vector control.

22. **Objectives:** The objective of the operational framework is to guide Member States in planning and implementing regional vector control response actions in the context of their local situations, particularly:

- (a) To strengthen institutional, infrastructural and human capacity, including basic and applied research for entomology and vector control;
- (b) To strengthen collaboration, community participation, integration of tools and approaches across diseases, and to enhance vector surveillance and monitoring and evaluation of interventions;
- (c) To strengthen national policy formulation, leadership; advocacy, resource mobilization and partner coordination.

### 23. Milestones and targets

Milestones by 2022:

- (a) Reduce mortality due to VBDs by at least 30% from its 2016 value;
- (b) Reduce incidence of VBDs by at least 25% from its 2016 value.

Milestones by 2025:

- (a) Reduce mortality due to VBDs by at least 50% from its 2016 value;
- (b) Reduce incidence of VBDs by at least 40% from its 2016 value;
- (c) Prevent epidemics of VBDs in all Member States through rapid detection and curtailment of outbreaks to prevent spread to more places and beyond borders.

Targets by 2030:

- (a) Reduce mortality due to VBDs by at least 75% from its 2016 value;
- (b) Reduce incidence of VBDs by at least 60% from its 2016 value;
- (c) Sustain prevention of VBD epidemics in all Member States.

### Guiding principles

24. The implementation of the regional framework will be guided by principles that ensure effective and locally adaptive vector control systems for maximum and sustainable impact. The framework will facilitate attainment of the Thirteenth General Programme of Work<sup>14</sup> outcomes, and pertinent Sustainable Development Goals.<sup>15</sup>

- (a) **Government ownership:** Governments will provide leadership, requisite resources and galvanize stakeholders to pursue an inclusive and participatory approach for planning and implementation.
- (b) **Multisectoral collaboration and synergy:** Collaboration between the health sector and other stakeholders in the context of the one-health approach will be harnessed to exploit comparative advantages for planning and implementation.

<sup>14</sup> Thirteenth General Programme of Work: Targets and Indicators-World Health Organization. Geneva, Switzerland.[https://www.who.int/about/what.../GPW13\\_WIF\\_Targets\\_and\\_Indicators\\_English.pdf](https://www.who.int/about/what.../GPW13_WIF_Targets_and_Indicators_English.pdf) (accessed March 5, 2019).

<sup>15</sup> Resolution A/RES/70/1. Transforming our world: the 2030 agenda for sustainable development. In: Seventieth United Nations General Assembly, New York, 25 September 2015. New York: United Nations; 2015.

- (c) **Equity, gender and rights-based approach:** Data disaggregated by age, sex, socioeconomic status and geographical region will facilitate identification of vulnerable groups, and their access to effective vector control.
- (d) **Disability:** Effective vector control will avert disability due to debilitating outcomes of vector borne diseases.
- (e) **Community ownership:** All communities will access adequate information, knowledge and skills to ensure their full engagement as equal partners in health.
- (f) **Accountability and sustainability:** Mainstreaming potential impacts of VBDs in national policies and plans will be essential to the implementation of appropriate accountability and sustainability measures.
- (g) **Efficiency:** Rationalized provision and use of services will ensure maximum output for the least amount of resource input in the context of value for money.
- (h) **Universal health coverage:** Vector control to prevent, reduce and eliminate VBDs is essential to the achievement of universal access to health services.

### Priority interventions and actions

25. **Assessing vector control needs and mobilizing resources:** Member States will conduct national vector control needs assessments (VCNAs) through a multisectoral consultative process to identify opportunities for efficient vector control interventions, define requisite capacity to conduct priority activities and appraise existing capacity. Guided by the VCNAs, Member States will develop plans to guide mobilization of resources for implementing national strategic plans including VBD outbreak response.

26. **Developing/updating vector control strategic plans:** National integrated vector management strategic plans will be developed/updated by Member States in line with existing normative guidance, including regular review of progress of national vector control efforts. Development of strategic plans will emphasize alignment of national targets for protection of at-risk populations from the different VBDs and utilization of appropriate and evidence-based combination of vector control interventions with community participation. To achieve greater reduction of transmission and burden of VBDs in Member States, the strategic plan will include performance monitoring and evaluation of impact of interventions as an integral component.

27. **Enhancing vector control and intersectoral workforce:** Further to capacity appraisal and strategic planning, Member States will engage sufficient human resources for effective and sustainable prevention, surveillance and control of VBDs including response to outbreaks, epidemics and humanitarian crises. Staff from ministries of health, other relevant sectors and institutions supporting public health entomology and vector control will be trained to ensure multisector involvement and collaboration. Member States will establish, revitalize and promote national institutional (academia and research centres) networks to support sustained training and education in public health entomology.

28. **Setting the agenda for basic and applied research on entomology and vector control:** Member States will develop a rational national research agenda that prioritizes strategic focus areas needed for entomology and evidence-based decision-making on vector control. Progress of the set agenda including research on disease vectors, transmission dynamics, environmental conditions and effectiveness of control programmes will be reviewed. Member States will support public health research to mitigate harmful shifts in environmental biodiversity including climate change. The agenda will guide research institutions working on VBDs to align the focus of their work and funding with the needs of Member States.



29. **Establishing interministerial and multisectoral task forces:** Member States will establish national interministerial and multisectoral task forces and national vector control committees to engage all stakeholders in the control of VBDs and to facilitate intersectoral implementation of actions. The multisectoral task force will also include the private sector, centres of excellence, research institutions and universities. The functionality of task forces or committees in Member States with existing but non-functional similar establishments will be revitalized.

30. **Integrating vector surveillance systems with health information systems:** Member States will strengthen national vector surveillance systems and actions through integration with existing health information systems to guide vector control programmes. National programmes will conduct routine and systematic vector surveillance, establish databases supported by geographic information system-based mapping for vector distribution, behaviour and other entomological parameters, and review entomological, epidemiological and intervention data. In addition to entomological and vector control data, environmental health data will be integrated into the routine health information systems. Member States will support the strengthening of laboratory services to detect arbovirus diseases in the context of integrated disease surveillance and response and the “one health” approach. Member States will involve national institutional networks in vector surveillance, monitoring and evaluation of performance and impact of vector control programmes.

31. **Implementing evidence-based vector control:** Member States will implement the integrated vector management (IVM) approach to reduce or interrupt the transmission of VBDs.<sup>16</sup> Key vector control interventions such as long-lasting insecticidal nets and indoor residual spraying, together with supplementary tools for larval source management; environmental management and personal protection will be scaled up. Vector surveillance, including monitoring and management of insecticide resistance as well as vector control operations during emergencies, will be addressed as priorities. Member States will assess existing and emerging innovative interventions to complement the contemporary tools. The relevant tools will be implemented in response to humanitarian disasters and emergencies. Community engagement and collaboration will be key to operationalizing vector control interventions.

32. **Developing advocacy strategic plans for effective communication:** Broad multisectoral plans for effective communication to promote vector control and advocate for political support will be developed by Member States. The strategy will target policy-makers, communities and partners, and focus also on raising awareness of all stakeholders including community engagement and mobilization. Member States will support advocacy initiatives to reduce costs related to insecticides used for vector control. Approaches will be adopted to ensure coordination and harmonization of surveillance and vector control using an integrated and multisectoral approach. Communication strategies will inform national plans for continuous involvement and capacity building of community members through appropriate training.

33. **Improving collaboration and coordination:** Member States will improve coordination of work on surveillance and control of VBDs and collaboration among stakeholders and partners. Clear working mechanisms involving a joint plan of action for prevention, surveillance and control methods with identified roles, responsibilities to fill the gaps, will be established. Strategies for mobilizing the resources (human, financial, infrastructural, organizational/institutional) necessary to support vector surveillance and control interventions will be harmonized. Member States will operationalize ministerial task forces and implement priority activities through shared responsibilities and roles of all stakeholders to ensure efficiency and sustainability of vector control programmes. Subregional communities will be engaged to galvanize coordination and collaborative activities. Member States will establish synergies with existing major public health

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<sup>16</sup> WHO. Global strategic framework for integrated vector management. Geneva: World Health Organization; 2004. [http://whqlibdoc.who.int/hq/2004/WHO\\_CDS\\_CPE\\_PVC\\_2004\\_10.pdf](http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_PVC_2004_10.pdf). (accessed 19 June 2019).

and environmental management initiatives being actively promoted in the Region to reduce vulnerability to climate change and its impacts.

**34. Updating/revising regulatory and legislative frameworks:** Member States will update/revise regulatory and legislative controls for public health services and provide appropriate regulatory frameworks for safe use of quality-assured vector control tools and interventions, including application of insecticides for IRS and the use of LLINs. Safe use and disposal of insecticides for public health and adherence to personal and environmental protection through regulatory legislation will be addressed. Member States will develop new legislation to support changes in programmatic structures, regulatory processes and support partnership and intersectoral working mechanisms. Ethical and research review committees as well as national environmental assessment mechanisms will be established or strengthened to facilitate evaluation of vector control tools, including potential adverse effects of innovative approaches such as the use of transgenic mosquitoes, and to address inherent ethical issues.

**35. Establishing normative support for vector control:** Systems with robust quality assurance processes at national level will be put in place by Member States to ensure the highest possible quality of vector control commodities and assessment of product specifications by competent regulatory mechanisms prior to procurement/deployment with performance monitoring throughout their lifetime. In utilizing regulatory mechanisms for ensuring product quality, clear product specifications and performance data, including their public health value and the basis of evidence of effectiveness on the disease will be obtained from the WHO prequalified list of products.

#### **ACTION PROPOSED**

36. Implementation of priority interventions and actions will be assessed by Member States and progress reports will be presented for review by the Regional Committee after every two years. The Regional Committee examined and adopted the priority interventions and actions proposed in the Framework for Implementation of the Global Vector Control Response in the WHO African Region.