World Health Organization

SEVENTIETH WORLD HEALTH ASSEMBLY **A70/26 Rev.1**
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Global vector control response

Report by the Secretariat

1. At its 140th session, the Executive Board noted an earlier version of this report[1] and requested the Secretariat, in consultation with Member States, to prepare a draft resolution for consideration by the Seventieth World Health Assembly.

2. This updated version of the report reflects comments made in the discussion at the Board's 140th session and input from a broad online consultation held in late 2016. In particular, the revisions concern extending the response to cover schistosomiasis (paragraph 3), including morbidity targets (paragraph 14) and providing more details on the role of the Secretariat (paragraphs 25 and 26). New text has been added on cost estimates for implementation (paragraph 23). A draft resolution was prepared following consultations with Member States.[2]

3. Vector-borne diseases pose a major threat to the health of societies around the world. They are caused by parasites, viruses and bacteria transmitted to human beings by mosquitoes, sandflies, triatomine bugs, blackflies, ticks, tsetse flies, mites, snails and lice. Major global vector-borne diseases of humans include malaria, dengue, lymphatic filariasis, Chagas disease, onchocerciasis, leishmaniasis, chikungunya, Zika virus disease, yellow fever, Japanese encephalitis and schistosomiasis. Other vector-borne diseases are of local importance in specific areas or populations, such as tick-borne diseases.

4. The major vector-borne diseases together account for around 17% of the estimated global burden of communicable diseases and claim more than 700 000 lives every year. The burden is highest in tropical and subtropical areas. More than 80% of the global population live in areas at risk from at least one major vector-borne disease, with more than half at risk from two or more. The risk of infection is particularly high in towns and cities where vectors proliferate because of favourable habitats and contact with human beings is high. Morbidity and mortality rates are often disproportionately high in poorer populations. People who survive these diseases can be left permanently disabled or disfigured. Vector-borne diseases exact an immense toll on economies and restrict both rural and urban development.

5. Impressive gains have been made against malaria, onchocerciasis, lymphatic filariasis and Chagas disease, but the burden of many other vector-borne diseases has increased in recent years. Social, demographic and environmental factors have altered pathogen transmission patterns, resulting

[1] See document EB140/26 and the summary record of the Executive Board at its 140th session, twelfth meeting, section 1.

[2] Document A70/26 Rev.1 Add.1.

in intensification, geographical spread, re-emergence, or extension of transmission seasons. In particular, unplanned urbanization, lack of reliable piped water supply and inadequate solid waste or excreta management can render large populations in towns and cities at risk of viral diseases spread by mosquitoes.

6. Most vector-borne diseases can be prevented by vector control, if it is implemented well. Proven interventions targeting vectors offer some of the highest cost–effectiveness ratios in public health. Major reductions in the incidence of malaria, onchocerciasis and Chagas disease have been largely due to strong political and financial commitment and substantial investments in vector control. Of the 663 million cases of malaria estimated to have been averted in sub-Saharan Africa between 2001 and 2015, more than half have been attributed to the wide-scale deployment and use of long-lasting insecticidal nets and indoor residual spraying. For other vector-borne diseases, vector control has not yet been used to its full potential or had maximal impact because interventions are inadequately delivered; this situation arises not only because of meagre investments, but also due to the collapse and dire lack of public health entomology capacity, poor coordination within and between sectors, weak or non-existent monitoring systems and limited sustainable and proven tools for certain vectors and situations.

7. Since 2014, major outbreaks of dengue, malaria, chikungunya, yellow fever and Zika virus disease have afflicted populations, claimed lives and overwhelmed health systems in many countries. In 2016, Zika virus infections and their associated complications directly affected individuals and families, and caused social and economic disruption.

8. The global fight against vector-borne diseases is beset by multiple interconnected difficulties. Numerous countries affected by or at risk of more than one vector-borne disease do not capitalize on available resources and capacity as well as experience learned from other diseases. Disease-specific programmes may compete for resources. Increased availability of suitable vector habitats has resulted from urbanization and changes in land use, water management, farming practices and climate – their consequences are often unpredictable, uncontrollable and complex. Insecticide resistance and shifts in vector behaviour that reduce the efficacy of interventions threaten to undermine prevention approaches. Political and financial commitments have been lacking, with limited investments in vector control beyond scale-up of deployment of insecticide-treated nets and indoor residual spraying against malaria vectors.

9. Owing to the strong influence of social, demographic and environmental factors on transmission of vector-borne diseases, it is essential that vector control delivery and monitoring systems are flexible in order to support locally tailored approaches. Realignment of national programmes to optimize implementation of interventions against multiple vectors and diseases would ensure that available resources are applied with maximum impact. Health systems must be prepared to detect, and respond quickly and effectively to, changes. This capability requires not only the availability of effective control tools but also well-trained staff who can build sustainable systems for evidence-based delivery of vector control interventions.

10. The recent upsurge in vector-borne diseases has generated renewed attention to and reiterates the need for a comprehensive approach to vector control. Achievement of Sustainable Development Goal 3 (Ensure healthy lives and promote well-being for all at all ages) relies on effective vector control, and work towards other targets under the 2030 Agenda for Sustainable Development, such as those in Goal 6 (Ensure availability and sustainable management of water and sanitation for all), Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable) and Goal 13 (Take urgent action to combat climate change and its impacts) will further contribute to that end. Additional opportunities for better vector control will also become available through the development

of novel tools, technologies and approaches. Advantage can be taken of recent advances that enable an evidence-based approach, such as real-time data-capture systems or social media as well as predictive informatics tools, in order to strengthen planning, implementation and evaluation of vector control.

11. The Secretariat began in June 2016 a fast-track global consultative process on a global vector control response with Member States and stakeholders, including organizations of the United Nations system, scientific and research groups, non-State actors and implementation partners. The process for developing the response was launched by three departments in the Secretariat with support from a steering committee consisting of representatives of Member States, leading vector control experts and other scientists as well as other stakeholders, and from regional offices, WHO's Malaria Policy Advisory Committee and the Strategic and Technical Advisory Group for Neglected Tropical Diseases.

12. The steering committee has convened twice (Geneva, 3 and 4 August, and 4 and 5 October 2016) and reviewed preliminary drafts of a global vector control response for the period 2017–2030 (in alignment with the 2030 Agenda for Sustainable Development).[1] Further comments on the draft text from Member States and members of the global health community were elicited through a broad online consultation in November 2016, with updates to the text made accordingly. Vector control was discussed by some WHO regional committees in 2016 in the context of dengue and malaria, and the draft response has been presented at a series of scientific and technical meetings held between June 2016 and April 2017.

THE DRAFT GLOBAL VECTOR CONTROL RESPONSE 2017–2030 IN BRIEF[2]

13. The draft global vector control response aims to support the implementation of a comprehensive approach to vector control that will enable the setting and achievement of disease-specific national and global goals and contribute to attainment of the Sustainable Development Goals. It also aims to support countries in mounting coherent and coordinated efforts to counter the increasing burden and threat of vector-borne diseases.

14. The document provides strategic guidance to countries and development partners for urgent strengthening of vector control as a fundamental approach to preventing disease and responding to outbreaks. This objective calls for significant enhancement of vector control programming, supported by increased numbers of technical staff, stronger monitoring and surveillance systems, and improved infrastructure. The vision of this response is a world free of human suffering from vector-borne diseases, with the aim of reducing the burden and threat of vector-borne diseases through effective locally adapted and sustainable vector control. The response sets an ambitious target of at least 75% reduction in mortality and 60% reduction in case incidence due to vector-borne diseases globally by 2030 relative to 2016, with epidemics prevented in all countries in line with Sustainable Development Goal 3. Interim milestones have been set, with reductions in mortality of at least 30% by 2020 and at least 50% by 2025, and reductions in morbidity of at least 25% and 40% over the same time periods.

[1] Meeting reports are available on request.

[2] The full draft document can be accessed on the WHO website at http://www.who.int/malaria/global-vector-control-response (accessed 13 March 2017).

15. The response comprises two foundational elements: (1) enhanced human, infrastructural and health systems capacity and capability for vector control and vector surveillance within all locally relevant sectors, and (2) increased basic and applied research to underpin optimized vector control, and innovation for development of new tools, technologies and approaches.

16. **Enhance vector control capacity and capability.** Formulating an inventory of the human, infrastructural, institutional and financial resources available and making an appraisal of existing organizational structures for vector control are essential first steps. Career structures in vector control within national and subnational programmes must be evaluated. Opportunities to attract resources from beyond the health sector should be explored, including staffing arrangements that involve collaboration and time-sharing. Where the number of human resources is inadequate, efforts should be made to recruit and train staff from across sectors in the field of vector management and control and more broadly in public health, epidemiology and programme management.

17. **Increase basic and applied research, and innovation.** Vector control must be evidence-based to ensure local appropriateness and generate impact data required to justify continued investment in implementation. Basic research is urgently needed to understand better those aspects of vectors that influence interactions with human beings and pathogen transmission, such as biology, behaviour and environment. The results of such research should inform the development of innovative approaches and interventions. Applied research is also needed to assess effectiveness and optimize delivery of interventions. A research agenda that prioritizes strategic areas for attention should be defined by the national vector-borne disease control programme, in collaboration with relevant partners. This agenda should serve to guide research and academic institutions in aligning their work, help to avoid gaps or overlap, and assist in identifying additional external resources to support priority work.

18. Action is required in four key areas (pillars) to attain effective locally adapted and sustainable vector control. These four areas are aligned with the key elements of an integrated vector management approach.

19. **Pillar 1. Strengthen inter- and intrasectoral action and collaboration.** For maximum impact and efficiency, collaboration with non-health sectors must be enhanced, along with improved coordination of activities within the health sector such as water, sanitation and hygiene initiatives. National vector control programmes should become an integral part of national development strategies on poverty reduction and resilience to climate change, as well as regional development cooperation strategies. Engagement with ministries of agriculture, education, environment, finance, housing, tourism, transport and water is especially important. Municipality and local administrative structures can contribute to improving vector control services, enhance community engagement and mobilization, and create towns and cities more resilient to climate change. Collaboration will require strong political commitment and resources from central government with respective ministerial strategic plans to reflect adequately contributions to vector control. An interministerial taskforce should be established and funded appropriately to conduct the necessary coordination activities. The initial task should be to coordinate an assessment of national vector control capacity and needs, if that has not recently been done. An appraisal of the partnership landscape will help to identify all the existing and potential resources available to support vector control. Strategies need to be adapted to country-specific social determinants.

20. **Pillar 2. Engage and mobilize communities.** Given the major role of communities in the prevention, control and elimination of vector-borne diseases, the success and sustainability of vector control interventions require coordination between many stakeholders but especially depend on harnessing local knowledge and skills. Communities need to be mobilized to take responsibility for and implement vector control and surveillance actions through appropriate participatory

community-based approaches. Strategies for engaging communities should be built upon research, behavioural situation analyses, monitoring and evaluation of engagement, and long-term sustainability.

21. **Pillar 3. Enhance vector surveillance and monitoring and evaluation of interventions.** As the capacity of vectors to transmit pathogens and their susceptibility to vector control measures can vary by species, location and time, depending on local environmental factors, vector control must be implemented on the basis of up-to-date local data. Vector surveillance should be routinely conducted at representative sites in areas where vector-borne diseases are endemic as well as those with conditions favourable for transmission. Linkage with epidemiological and health intervention coverage or usage data is essential. This information should be used to inform sound decision-making for policy, planning and implementation of vector control and assist in early responses to the build-up of vector populations before outbreaks occur.

22. **Pillar 4. Scale up and integrate tools and approaches.** A key action to maximize the public health impact of vector control is the deployment and expansion of tools and approaches appropriate to the epidemiological and entomological context. Each vector control intervention that is selected for use in a particular setting should be applied to a high standard of quality and at optimal coverage. One tool can have multiple effects against several vectors and diseases. In some settings, an approach using multiple vector control interventions can have greater impact in reducing transmission or disease burden than use of one intervention alone. Core interventions may need to be supplemented with additional tools in order to meet specific challenges such as insecticide resistance. Integrated strategies should also be applied to reduce vector habitats by altering the domestic environment, for instance by improving water supply so as to prevent household-level storage, or to prevent access of vectors to human dwellings by installing screening on house entry points.

23. Three enabling factors are needed to implement the response: (1) country leadership; (2) advocacy, resource mobilization and partner coordination; and (3) regulatory, policy and normative support. Achievement of the targets and milestones set out in this draft response will need significant investment from both international and domestic sources to strengthen vector control capacity and capability, research and innovation, cross-sectoral coordination, community involvement, and surveillance and monitoring systems. It is estimated that full implementation of the priority activities defined for the interim period 2017–2022 will require an annual investment of US$ 330 million. This equates to an average of US$ 0.05 per person per year at risk from at least one vector-borne disease, with variation by burden and risk as well as other local factors such as income level. This represents a maximum value as it is assumed that over time adequate and well-trained local workforces will expand to undertake surveillance and coordination functions. The figures exclude both the cost of vector control commodities and their deployment, and research and innovation implementation costs. Required resource costs were estimated using WHO's tools for cost–effectiveness and strategic planning and cost assumptions.[1] These costs for workforce, coordination and surveillance represent a relatively modest investment in relation to implementation of core interventions, such as insecticide-treated nets (US$ 1.27 per person protected per year), indoor residual spraying (US$ 4.24 per person protected per year), and community-based activities for dengue prevention (estimated to exceed US$ 1.00 per person protected per year). Accurate estimates of resource requirements and costs are expected to be made through comprehensive vector control needs assessments at country and subnational levels.

[1] Cost–effectiveness and strategic planning (WHO-CHOICE), available at http://www.who.int/choice/en/# (accessed 14 March 2017).

ROLE OF THE SECRETARIAT

24. In line with WHO's core functions, the Secretariat will continue to set and disseminate normative guidelines, policy advice and implementation guidance to support regional and country actions. It will provide, on request, support to Member States in implementing the draft global vector control response and provide guidance in reviewing and updating national vector control strategies.

25. The Secretariat will ensure that its policy-setting process responds to changing vector control needs and that its global technical guidance is regularly updated by incorporating information about innovative tools, technologies and approaches that are proven to be safe, effective and of public health value with due consideration of ethical issues and impact on the natural environment. Expert groups will be convened as necessary to address key issues related to policy development.

26. The Secretariat will strengthen its own capacities and capabilities at the global, regional and country levels so that it is better positioned to lead a coordinated global effort. It will continue to coordinate activities across related programmes and initiatives of the Organization, including the WHO Health Emergencies Programme, International Health Regulations, and R&D blueprint for action to prevent epidemics. It will also provide support to initiatives on advocacy, resource mobilization and partner coordination.

27. The Secretariat will promote the generation of research and knowledge that is required to accelerate progress towards a world free of human suffering from vector-borne diseases. It will monitor implementation of the response and regularly evaluate progress towards the interim milestones and the targets for 2030.

ACTION BY THE HEALTH ASSEMBLY

28. The Health Assembly is invited to note the report and adopt the draft resolution contained in the accompanying document A70/26 Rev.1 Add.1.

ANNEX

OVERVIEW OF TECHNICAL ELEMENTS OF THE DRAFT GLOBAL VECTOR CONTROL RESPONSE 2017–2030

Vision: A world free of human suffering from vector-borne diseases

Aim: Reduce the burden and threat of vector-borne diseases through effective locally adapted and sustainable vector control

Goals	**Milestones**		**Targets**
	2020	**2025**	**2030**
Reduce mortality due to vector-borne diseases globally relative to 2016	By at least 30%	By at least 50%	By at least 75%
Reduce case incidence due to vector-borne diseases globally relative to 2016	By at least 25%	By at least 40%	By at least 60%
Prevent epidemics of vector-borne diseases[a]	–	In all countries without transmission in 2016	In all countries

[a] Rapid detection and curtailment of outbreaks to prevent spread beyond the country.

RATIONALE

- Major vector-borne diseases of humans include malaria, dengue, lymphatic filariasis, Chagas disease, onchocerciasis, leishmaniasis, chikungunya, Zika virus disease, yellow fever, Japanese encephalitis and schistosomiasis. Other vector-borne diseases are of local importance in specific areas or populations, such as tick-borne diseases.

- These diseases account for around 17% of the estimated global burden of communicable diseases and disproportionately affect poorer populations. They impede economic development through direct medical costs and indirect costs such as loss of productivity and tourism.

- Social, demographic and environmental factors strongly influence transmission patterns of vector-borne pathogens, with major outbreaks of dengue, malaria, chikungunya, yellow fever and Zika virus disease since 2014.

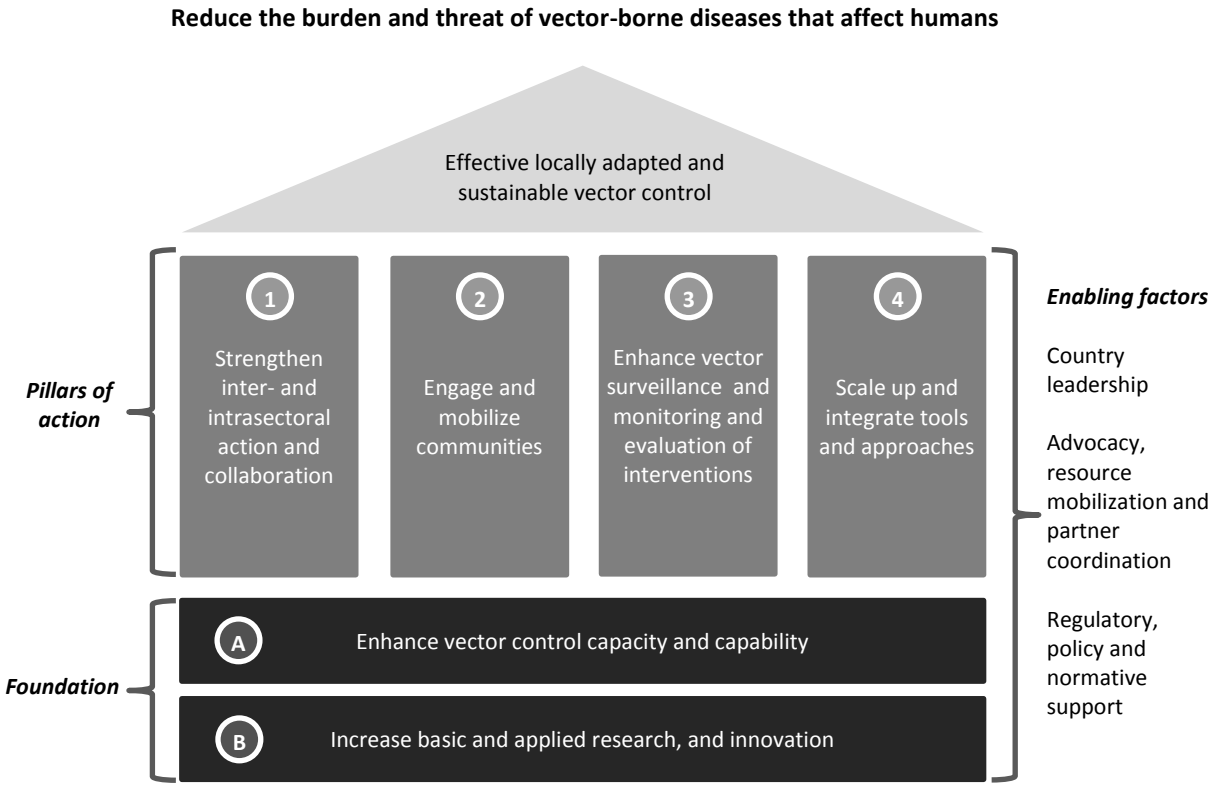
- Most vector-borne diseases can be prevented by vector control, if it is implemented well. Major reductions in the incidence of malaria, onchocerciasis and Chagas disease have been largely due to strong political and financial commitment.

- For other vector-borne diseases, vector control has not yet been used to its full potential or had maximal impact. This situation can be reversed by realigning programmes to optimize the delivery of interventions that are tailored to the local context.

- This response calls for improved public health entomology (and malacology) capacity and capability, a well-defined national research agenda, better coordination within and between

sectors, community involvement in vector control, strengthened monitoring systems and novel interventions with proven effectiveness.

Response framework



PRIORITY ACTIVITIES FOR 2017–2022[1]

1. National and regional vector control strategic plans developed or adapted to align with the draft global vector control response.

2. National vector control needs assessment conducted or updated and resource mobilization plan developed, including for outbreak response.

3. National entomology and cross-sectoral workforce appraised and enhanced to meet identified requirements for vector control.

4. Relevant staff from health ministries or supporting institutions trained in public health entomology.

5. National and regional institutional networks to support training and/or education in public health entomology and technical support established and functioning.

[1] To be revised and updated for the subsequent period of 2023–2030.

6. National agenda for basic and applied research on entomology and vector control established and/or progress reviewed.

7. National interministerial task force for multisectoral engagement in vector control established and functioning.

8. National plan for effective community engagement and mobilization in vector control developed.

9. National vector surveillance systems strengthened and integrated with health information systems to guide vector control.

10. National targets for protection of at-risk population with appropriate vector control aligned across vector-borne diseases.

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