

# Addressing the environmental determinants of health in VECTOR SURVEILLANCE AND CONTROL STRATEGIES

**700,000**

deaths are caused by vector-borne diseases annually (1).



**80%** 

of the world's population is at risk of one or more vector-borne diseases (1).

**12 MAJOR DISEASES**

are caused by vectors globally. Vectors transmit many other disease pathogens to humans (1).

Between 2010 and 2018,

**13.2 million**

cases of dengue were recorded in the Region of the Americas, **99%** more than in the previous decade (2000-2009) (2).

**\$** In the case of dengue, the estimated cost per disability-adjusted life year (DALY) prevented through vector control is between

**US\$1,992 & US\$3,139** (3).



The number of countries and territories in the Region where there is simultaneous circulation of two or more serotypes of dengue virus has increased in the last 23 years (1995-2018). This, in turn, increases the risk of severe cases and outbreaks of the disease.

The total global cost of dengue was estimated at around **US\$ 8.9 billion** in 2013 (3).

The success of the response to the growing threat of vector-borne diseases depends on: a health sector that exercises strong leadership; good strategies for communication with civil society, combined with civil society participation; mobilization of resources and coordination among the sectors involved; and national and subnational public policies that integrate vector surveillance and control with the environmental determinants of health.

Unplanned urbanization, climate change, and other environmental changes confirm the need to increase investments to ensure implementation of integrated vector management. These include environmental health interventions, such as safe management of water, sanitation, and hygiene services, among others.

Risk communication programs are key elements in vector surveillance, prevention, and control vectors, since changes in the population's environmental behavior (i.e., effective citizen participation in the elimination of breeding sites and environmental protection) play a significant role in reducing arboviral diseases.

Integrated vector management is essential to optimize and improve the effectiveness of surveillance and control actions and to achieve the sustainability of integrated strategies (4).

In Latin America & the Caribbean, more than

 **200 million**

people receive intermittent water service (service not available **24 hours a day, 7 days a week**) (6).

During the period 2015-2018

 **819,492**

cumulative (suspected and confirmed) cases of **Zika** virus disease were reported in the Region (5).

In Latin America and the Caribbean,

 **34 million** people still lack access to

an improved source of water for human consumption and **106 million** people do not have a sanitation system (6).

Climate change and other environmental changes are among the main factors that have led to the emergence or re-emergence of vector-borne diseases (VBDs). These factors can expand the geographical distribution of these diseases and extend the transmission season, increasing the morbidity and mortality associated with them.

Considering the impact of environmental determinants on the incidence of vector-borne diseases, it will be necessary to incorporate multiple integrated and multisectoral approaches into vector surveillance and control strategies. These approaches should include initiatives that promote healthy spaces, for example, through improved solid waste management, safe water management, and sanitation to guarantee the continuity and quality of services, as well as proper management of chemical residues from vector control activities.

Similarly, it is necessary to strengthen urban development and planning in order to minimize human contact with vectors and facilitate sustainable and cost-effective prevention of the diseases they transmit. Communities should be encouraged to participate in vector control strategies.

## PAHO's response

Within the framework of an integrated approach to the environmental determinants of health and the Plan of Action on Entomology and Vector Control 2018-2023 (7), the following strategic actions have been identified for technical cooperation with the countries of the Region:

- Strengthen public policy design by adopting an integrated and multisectoral approach to vector surveillance and control, in order to support the integrated vector management strategy and its coordination with environmental health interventions.
- Advocate for greater investment in water, sanitation, and hygiene services, giving priority to vulnerable areas where vector-borne diseases have the greatest incidence, in order to guarantee safe management of the services (access, availability, continuity, and quality).
- Promote and strengthen the establishment of intersectoral work groups, advocating for the targeted use of financial resources and human capital and considering the epidemiological profiles defined in the information systems.
- Develop knowledge in other sectors (health, environment, housing, water and sanitation, agriculture, and tourism, among others) about how the environmental determinants of health impact vector surveillance and control strategies.
- Promote the use of vector surveillance and control methods based on an understanding of vector biology, disease transmission, and morbidity.
- Help design education and training programs to improve patient care and vector surveillance and control, aimed at public health workers and professionals in other sectors who work in health-related fields.
- Strengthen prevention and contingency systems to ensure an adequate and timely response focused on risk factors and on the development of local capacity to deal with disasters and health emergencies. Also, promote the design of instruments to help implement vector control measures and supervisory mechanisms to ensure proper, rational, and controlled use of insecticides.
- Promote the capacity to design communication strategies for vector surveillance and control in order to increase citizen participation and achieve changes in the environmental behavior of the population (habits, attitudes, and customs).
- Promote information systems that integrate entomological and epidemiological indicators with environmental health indicators to facilitate rational use and prioritization of human and financial resources when making decisions at different levels.
- Strengthen environmental management strategies in endemic areas in order to join efforts to eliminate mosquito breeding sites in homes and urban public spaces (parks, schools, cemeteries, etc.).
- Promote the identification of areas at high risk of vector-borne transmission (risk stratification) within the framework of evaluations. Prioritize elimination of vectors and breeding sites in the areas with the greatest environmental vulnerability and concentration of people (such as schools and hospitals).

## References

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