How can we protect against dengue?

Aedes mosquitoes thrive in tropical and subtropical regions around the globe, putting over 125 countries at risk of dengue outbreaks. Around half of the world's human population live in dengue-endemic areas with a substantial risk of dengue transmission.¹⁻³

Current efforts for dengue control are directed at reducing infection rate through vector control methods, such as personal protection, biological control, chemical control, and environmental management of mosquitoes. Advances in those vector control methods⁴⁻⁹ are a source of optimism for dengue prevention.

There is still the need for a comprehensive strategy as no single intervention is expected to be sufficient to control dengue.⁵

The World Health Organization (WHO) also promotes an integrated vector management approach for control of *Aedes aegypti* and *Aedes albopictus*, including community education to achieve sustainable and locally adapted interventions.^{10,11}







Sustained Vector Control



Dengue, as well as Zika and chikungunya are infections spread by the same mosquito species,¹⁻⁴ therefore interventions to prevent and control these diseases are often similar and overlapping. A vector control intervention is vulnerable to weakening the results of its own impact over time, if deployed independently.⁵⁻⁸



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Environmental modifications



Chemical control















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References

Education

Local education on the link between mosquito bites and dengue could play a crucial role in the prevention of dengue in endemic areas, and this need may not be met in many regions.^{9,10}

In several studies it has been shown that there are gaps in knowledge about dengue diagnosis test, *Aedes aegypti* and dengue route of transmission among HCPs¹¹ and a poor awareness of dengue within much of the population.⁹⁻¹⁰

Environmental modifications

Infrastructure improvements, such as the installation of water systems to replace water storage containers, can help eliminate mosquito breeding grounds, while smaller-scale changes such as window and door screens can keep mosquitoes out of homes. 12,13

However, environmental modifications have not been able to achieve large-scale success in controlling the spread of dengue.¹⁴

Chemical control

Chemical control includes the use of insecticides targeting both larval (applied to container habitats such as water storage containers) and adult mosquitoes (such as residual treatments applied to surfaces or space sprays for emergency situations only).¹³

However, chemical control is challenged by the development of insecticide resistance, which reduces the efficacy of vector control strategies.¹⁵

Biological control

There are a number of emerging novel biological techniques for vector control, including sterile insect techniques (SITs) and incompatible insect techniques (IITs).¹⁶⁻¹⁹

SITs aim to suppress mosquito populations, e.g., male mosquitoes can be sterilized using chemicals or radiation; IIT methods include the release of male mosquitoes that transmit a lethal gene to their offspring, reducing population numbers.¹⁶⁻¹⁹



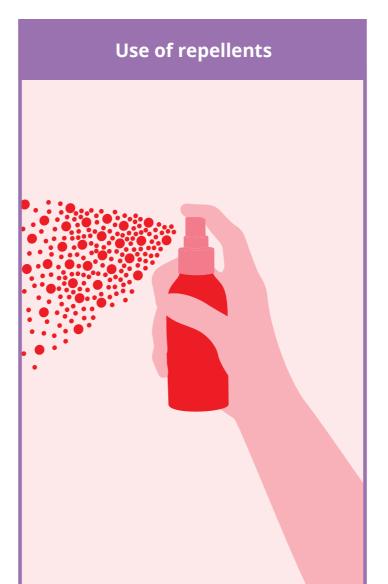


Personal Protection



Personal protection methods to avoid mosquito bites provide only short-term protection, and are limited by inconsistent application and 'compliance fatigue' over the long term.¹⁻³





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Personal Protection

References



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Use of repellents

Individuals can help protect themselves against mosquito bites by applying repellents (e.g. DEET, picaridin) to exposed uncovered skin.4

The use of repellents only provides short-term solutions and is limited by inconsistent application.1-3

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Protective clothing

Individuals can help protect themselves against mosquito bites by wearing long sleeved shirts, trousers, socks, etc., to reduce exposed skin.3

Other protective measures

Other measures to help protect against mosquito bites include covering cribs, strollers and baby carriers with mosquito netting, placing mosquito netting over beds, and avoiding vectors during prime feeding times (early morning and in the evening before dusk).4











Vaccination (**)

The WHO has noted some key considerations for the development and implementation of DENV vaccination strategies like the choice of target populations, delivery approaches, vaccination schedules and overall immunization coverage by natural infection in the population.¹

Currently, several vaccine candidates are under clinical development.²⁻⁴

Please speak with your local health authorities to find out about any vaccine which may be licensed and approved for use in your country.

