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Key messages for individuals, families, and communities on actions to prevent and control the *Aedes aegypti* mosquito, which transmits dengue, chikungunya, Zika and other arboviral diseases in the Americas

This document is for the vector control programs of the Ministries of Health of PAHO Member States. Together with their national communication and social mobilization teams, they can adapt this information to the specific needs of the target population in each country. The information presented below deals with general aspects of the *Aedes aegypti* mosquito and recommendations for its control to prevent or reduce the risk of transmission of dengue, chikungunya, Zika, and other urban arboviruses transmitted by this vector in the Americas.

Getting to know *Aedes aegypti*:

1. The *Aedes aegypti* mosquito is the main transmitter of the dengue, chikungunya, and Zika viruses in the Americas. It is present in almost all countries, except Canada. It is a domestic mosquito that lives in and around dwellings and can breed anywhere that water accumulates. It takes 7 to 10 days to complete the life cycle from egg to adult, with an adult lifespan of about 4 to 6 weeks.
2. Female *Aedes aegypti* mosquitoes transmit disease, feeding mainly on human blood every 3–4 days in order to reproduce and lay eggs. However, if they fail to extract sufficient blood, they continue feeding as long as they can. Males do not feed on blood.
3. After feeding, female *Aedes aegypti* lay eggs every 3–4 days in all types of containers that accumulate water. *Aedes aegypti* mosquitoes prefer to lay their eggs in artificial containers (especially in drums, barrels, and tires) that contain water, in and around houses, schools, and workplaces.
4. A female mosquito can lay about 1000 eggs during her lifetime. The number of eggs laid depends on the age of the female and the amount of blood sucked.
5. *Aedes aegypti* eggs can withstand drought conditions and remain viable for more than a year, allowing them to survive in unwashed containers. The transfer of these containers to other cities, regions, or countries facilitates the spread of the mosquito. This means it is important to properly clean the walls of water tanks and barrels, a process that destroys eggs that may be developing.



6. The mosquito is most active in the early morning and around dusk, making these the periods of highest risk for bites. However, females that need to continue feeding will look for a blood source at other times.
7. *Aedes aegypti* mosquito has a short flight range but it does not need to fly far, since food is available in homes near its breeding sites. Some mosquitoes fly up to 400 meters in search of food.

Vector control measures:

1. It is necessary to inform people about the risk of disease transmission and the measures that can be taken to reduce the number of mosquitoes and prevent bites.
2. Chemical control of adult mosquitoes helps lower the risk of dengue, chikungunya, Zika, and other arboviral infections, but this alone will not solve the problem.
3. The elimination of mosquito breeding sites, with community involvement, is the most effective and sustainable measure for mosquito control.
4. Actions to prevent and control mosquito breeding sites are a more effective prevention measure than operations to chemically control adult mosquitoes, and they have a longer-term impact.
5. National and local authorities should join efforts with the community to improve conditions that allow the proliferation of mosquitoes, while facilitating the adoption of healthy behaviors. The main recommendations in this regard include:
 - a. To prevent breeding sites, work with key services (e.g., for proper collection and management of solid waste) and provide access to piped water that is sufficient, healthy, and safe.
 - b. Promote legislation to prevent the accumulation of garbage on unoccupied properties and tires outdoors, and policies aimed at eliminating breeding sites in and around public/government facilities such as schools and health care centers.
 - c. Establish dialogues with the community and its leaders, neighborhood committees, and religious leaders, among others, to inform people about control measures. The control of mosquito breeding sites inside and around homes, and on public and private premises, is everyone's responsibility.
6. When cases first appear in a given area, health authorities should deploy targeted chemical control inside the homes of sick people and their neighbors in order to contain transmission and prevent additional cases.
7. If the number of dengue, chikungunya, or Zika cases rises, authorities can implement chemical control activities in areas surrounding homes to eliminate potentially infected adult mosquitoes and reduce the risk of transmission. These activities are carried out in the morning and at dusk, the periods of greatest vector activity.



8. The most effective chemical control activities are carried out at the same time as interventions to protect/treat or eliminate mosquito breeding sites.
9. Health authorities should provide people/families with detailed information about the purpose of these activities, and the locations and times when activities will be carried out in their neighborhoods, so that they have their doors and windows open to facilitate the penetration of insecticide into their homes. It is important to inform the population that this is a necessary and effective measure to reduce the risk of disease transmission when cases are on the rise.
10. It is necessary to make local governments and authorities aware that they need to take action to ensure the availability of safe water and sanitation, proper management of solid waste, and maintenance of hygienic conditions and healthy environments. All of these environmental determinants of health affect the well-being of individuals and communities.
11. In recent years, different technologies have been developed for vector control, such as the release of sterilized male mosquitoes, self-limiting genes, and Wolbachia, among others. Under certain conditions, these technologies have shown a beneficial impact in the medium and long term. However, they are not designed for epidemic containment due to the time required for their installation, deployment, and assessment. PAHO/WHO supports the development and evaluation of new approaches and tools for vector control with a view to selecting best practices based on scientific evidence.

Messages for communities on how to control and eliminate mosquito breeding sites and prevent arbovirus infections such as dengue, chikungunya, and Zika.

1. It is important to reduce contact between mosquitos and patients with dengue, chikungunya, or Zika infection. This helps prevent the spread of the virus and the disease.
2. Where mosquitoes are abundant, people should sleep under mosquito nets, especially pregnant women, older adults, sick people, and young children. In addition, mosquito netting can be used on doors and windows.
3. As additional measures, people can wear clothing that minimizes skin exposure (long-sleeved pants, skirts, and shirts) and closed shoes.
4. The community should be informed of the importance of participating in clean-up campaigns in neighborhoods, schools, and places where large numbers of people gather, to prevent the accumulation of outdoor containers that collect water.
5. Abandoned properties or land with standing water, grass, or accumulated garbage are breeding sites for the mosquito that transmits the dengue, chikungunya, and Zika viruses.
6. Areas that are abandoned or that have garbage (such as bottles, containers, plastic objects, and



tires that can accumulate water) are breeding sites for the mosquito that transmits the dengue, chikungunya, and Zika viruses.

7. To eliminate mosquito breeding, the following actions should be recommended:
 - a. Prevent water from accumulating in containers outside and around homes (e.g., in flower pots, bottles, containers, plastic bottles, and tires) so that they do not become mosquito breeding sites;
 - b. Wash flower pots with soap and water, and change any water they contain;
 - c. Wash and brush the walls of water barrels with soap and water;
 - d. Tightly cover domestic water tanks;
 - e. Avoid accumulating garbage; place it in closed plastic bags and dispose of it in closed containers, and dispose of unused containers;
 - f. Clean and unclog gutters and drains to prevent accumulation of water;
 - g. Keep useful containers outside the house tightly closed or cover them with mosquito nets, and keep them away from accumulating water;
 - h. Old tires should be disposed of appropriately, for example, in recycling centers, or should be collected by public waste services. They should not be left out in the open to become mosquito breeding grounds. They can also be stored in a dry, covered place;
 - i. Clean air conditioner water tanks weekly;
 - j. Empty and clean the external trays of refrigerators;
 - k. Wash animal water troughs at least once a week;
 - l. Protect doors and windows of dwellings with mosquito mesh/netting;
 - m. Clean and brush the surfaces of water containers;
 - n. Empty unused swimming pools and keep them dry;
 - o. Inspect dwellings and surrounding areas for standing water once a week.



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