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Advisory for the prevention and control of vector borne diseases during floods

Background

The unprecedented floods of 2025 have created an environment highly conducive for the transmission of various vector-borne diseases. The primary vectors of concern are mosquitoes, which find ideal breeding grounds in the vast areas of stagnant water. Dengue Fever, Chikungunya, and Malaria are of critical importance. Dengue and Chikungunya are both transmitted by *Aedes* mosquitoes, while Malaria is transmitted by *Anopheles* mosquitoes. Moreover, all must remain vigilant for other vector-borne illnesses such as Leishmaniasis transmitted by sandflies.

While the number of dengue cases has historically surged in the post-monsoon season, the current flood-related humanitarian crisis, with its widespread displacement and disruption of public health infrastructure, poses a heightened and complex risk for multiple vector-borne disease outbreaks.

Purpose

Keeping in view the seasonal trends and the heightened risk of multiple vector-borne diseases due to the 2025 floods, it is imperative to work on prevention while staying vigilant for the detection of cases and ensuring preparedness to launch response activities for curtailing the transmission of these diseases. This advisory is therefore, intended to alert all provincial and federal health departments and hospitals to make all necessary arrangements and measures for effectively managing the situation.

Risk Factors

The floods have exacerbated various factors contributing to the transmission of vector-borne diseases. These include:

- **Stagnant Water:** Large bodies of stagnant floodwater provide extensive breeding sites for mosquitoes (*Aedes* and *Anopheles*).
- **Displacement and Overcrowding:** The high mobility and density of populations in temporary shelters increase the risk of person-to-person transmission via vectors.
- **Disrupted Infrastructure:** Destroyed or damaged health facilities, water and sanitation systems, and lack of proper waste management contribute to a high-risk environment.
- **Exposure:** Displaced populations often lack proper shelter, personal protective equipment (like repellents and bed nets), and access to healthcare, leading to increased exposure to vector bites.

Clinical Presentation:

- **Dengue Fever:** Marked by a rapid onset of high fever, severe headache, retro-orbital pain, and muscle/joint pains. Warning signs include severe abdominal pain, persistent vomiting, and hemorrhagic manifestations.

- **Chikungunya:** A viral disease characterized by sudden onset of fever and severe, often debilitating, joint pain (arthralgia). Other symptoms may include headache, muscle pain, joint swelling, or rash. The joint pain can persist for weeks or months.

- **Malaria:** Symptoms typically include high fever with chills, headache, and fatigue. The incubation period varies depending on the parasite species. It can be fatal if not treated promptly.

- **Leishmaniasis:** Can manifest as cutaneous leishmaniasis (skin sores) or visceral leishmaniasis (fever, weight loss, and enlargement of the spleen and liver).

Early identification and proper clinical management of all these diseases are critical to reducing morbidity and mortality.

Specimen Collection, Transportation and Laboratory Confirmation:

- Collect and transport specimens for suspected cases of all relevant vector-borne diseases (e.g., blood for malaria smears/RDTs and dengue/Chikungunya serology/PCR).
- Label and pack properly in triple packing, maintaining a cold chain.
- Transport samples to provincial labs for testing (Dengue/Chikungunya ELISA, PCR; Malaria microscopy, RDTs) or send representative samples to the National Institute of Health (NIH), Islamabad for serotype/species detection.
- Time period for testing is critical. For dengue and Chikungunya, NS1 antigen and molecular detection can be done within the first week of illness. For malaria, blood smears should be taken upon fever onset.
- Ensure strict adherence to Standard Precautions for handling all suspected cases and samples.

Treatment/ Clinical Management

Case management at the primary and secondary care levels is critical:

- **Dengue & Chikungunya:** Treatment is supportive. Use acetaminophen for fever/myalgia and avoid NSAIDs like aspirin or ibuprofen. Maintain oral fluid intake. There is no specific antiviral treatment for these diseases.
- **Malaria**: Treatment protocols should follow national guidelines based on the *Plasmodium* species identified. Anti-malarial drugs must be readily available.
- **Leishmaniasis:** Treatment depends on the form of the disease (cutaneous or visceral). Specific anti-leishmanial drugs should be accessible.
- Hospitals must have adequate supplies of all necessary medications for vector-borne disease patient management.

Public Health Actions:

a. Strengthening of Disease Surveillance:

- Strengthen disease surveillance for all relevant vector-borne illnesses, including Dengue, Chikungunya, Malaria, and Leishmaniasis.
- Timely detection of new cases, clusters, and identification of hotspots is imperative for carrying out case response activities.
- Engage FETP fellows and alumni for outbreak investigation and response measures in flood-affected districts.

b. Vector Surveillance and Integrated Vector Management:

- Strengthen routine indoor and outdoor surveillance systems across all affected union councils, towns, and districts for all relevant vectors (*Aedes*, *Anopheles*, sandflies).
- Regularly inspect and eliminate stagnant water sources, including containers, flood-deposited debris, and pools of standing water left by receding floods.
- Ensure proper vector surveillance of hotspots like temporary relief camps, hospitals, and areas with extensive flood-related debris.

- Ensure mechanical elimination of all potential breeding sites. Chemical treatment (larvicides and adulticides) can be used as a supplementary measure where mechanical elimination is not possible.
- Fogging is recommended during an emergency to kill adult mosquitoes and is allowed after a vector density assessment by an entomologist.
- Apply WHO-approved insecticides as per manufacturer's recommendations for indoor residual spray (IRS) and fogging, particularly in high-risk areas.

c. Multi-stakeholder engagement:

- Involve all relevant stakeholders including local government, public health institutes, the Directorate of Malaria Control, Environment Protection Agency, Solid Waste Management, WASA, and international partners/organizations. This is crucial for a coordinated and effective response in the post-flood environment.

d. Personal protection:

- Adopt personal protection measures like wearing long-sleeved clothes, using mosquito repellent lotions/sprays, and using mosquito repellent coils.
- The use of bed nets (especially insecticide-treated nets) is crucial for all populations, particularly those in temporary shelters, to prevent bites from nocturnal vectors like *Anopheles* mosquitoes.
- Promote the use of mesh screens on windows and doors.

e. Risk Communication & Community Engagement:

- Arrange health awareness sessions to sensitize communities, especially those in flood-affected regions and temporary shelters, about the prevention of various vector-borne diseases.
- Disseminate brochures and pamphlets.
- Raise awareness through print, electronic, and social media, emphasizing the need for comprehensive protection from all disease-carrying vectors.

f. Hospital Preparedness:

- All designated hospitals must prepare/spare special isolation wards/beds for vector-borne disease patients.
- Ensure adequate supplies for the management of Dengue, Chikungunya, Malaria, and other relevant illnesses.
- Use insecticide-treated bed nets to prevent in-hospital transmission.
- Conduct regular vector surveillance and control measures within the hospital premises**.**

g. Monitoring & Evaluation:

- Active monitoring of all surveillance and control activities must be carried out to determine the effectiveness of interventions against all relevant vector-borne diseases.

Reporting

- Prepare a line-list for all suspected cases of vector-borne illnesses with comprehensive information. Enter data in DHIS-2 and share with DSRU at the provincial DGHS Office and NIH.

The Center for Disease Control (CDC), NIH may be contacted for technical assistance on Tel: 051-9255237 and Fax No. 051-9255575.