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Subject: **Advisory for the Prevention and Control of Dengue Fever**

Keeping in view the past seasonal trends and continuous increase in the number of suspected Dengue Fever cases reported from different parts of the country, it is imperative to be vigilant about the situation and take certain steps to limit further transmission. The objective of this advisory is to sensitize health care authorities to further strengthen and improve the level of preparedness in prevention and control of Dengue Fever.

Background:

- Dengue is the most common arthropod-borne viral (arboviral) illness in humans. Dengue has emerged as a worldwide problem only since the 1950s.
- Detected first during 1994; the Dengue Fever has now become endemic in almost all geographical regions of Pakistan. There is substantial evidence that multiple serotypes of Dengue virus are circulating in the different areas of Pakistan.
- Dengue is transmitted by mosquitoes of the genus *Aedes (Aedes aegypti* & *Aedes albopictus),* which are widely distributed in subtropical and tropical areas of the world. It is caused by any one of four subtypes of dengue viruses (DENV-1, DENV-2, DENV-3, or DENV-4).
- Approximately 50-100 million people are infected yearly out of which about 1% develop serious complications such as Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS); leading to about 22,000 deaths. Good clinical management may reduce the case fatality to <1%.
- A small percentage of persons who have previously been infected by one dengue serotype develop bleeding following infection with another dengue serotype. This syndrome is termed dengue hemorrhagic fever.
- Infection with one dengue serotype confers lifelong homotypic immunity to that serotype and a very brief period of partial heterotypic immunity to other serotypes, but a person can eventually be infected by all 4 serotypes.

Incubation period: After the bite of an infected mosquito, onset of illness occurs usually between 3 to 14 days (commonly 4-7 days).

Clinical presentation: Initial dengue infection may be asymptomatic (50-90%), may result in a nonspecific febrile illness, or may produce the symptom complex of classic dengue fever (DF). Classic dengue fever is marked by rapid onset of high fever, headache, retro-orbital pain, diffuse body pain (both muscle and bone), weakness, vomiting, sore throat, altered taste sensation, and a centrifugal maculopapular rash, among other manifestations. The severity of the pain leads to the term break-bone fever to describe dengue.

Sequential infections with different serotypes increase the risk for dengue haemorrhagic fever and dengue shock syndrome. Warning signs includes severe abdominal pain, persistent vomiting, marked change in temperature (from fever to hypothermia), haemorrhagic manifestations, change in mental status (irritability, confusion or obtundation) and thrombocytopenia (platelet count of <100,000/mm3).

Early signs of shock include restlessness, cold clammy skin, rapid weak pulse, and narrowing of the pulse pressure (systolic and diastolic blood pressure). Patients with dengue fever should be advised to return to the hospital if they develop any of these signs.

Treatment/ Clinical Management:

- There is no specific treatment for the disease and mainly relies on the management of symptoms. However, it is important for the attending physicians to exclude other treatable diagnoses.
- Dengue fever is typically a self-limiting disease with a mortality rate of less than 1%.
- When treated, dengue hemorrhagic fever has a mortality rate of 2-5%, but when left untreated, the mortality rate may approach up-to 50%.
- Neither any vaccine nor any anti-viral are recommended for prevention and treatment.
- During an established outbreak and in high endemic areas, the clinical management of suspected cases must be initiated without waiting for laboratory results.
- Supportive treatment must be undertaken as required for the specific disease manifestations. Fever and myalgia should be managed with acetaminophen. *Aspirin or nonsteroidal anti-inflammatory agents should generally be avoided because of the risk of bleeding complications and the potential risk of Reye's syndrome in children.*
- Patients with dengue fever should be cautioned to maintain their intake of oral fluid to avoid dehydration.
- The most important measure to assist the patient with dengue fever is to carefully evaluate them for impending complications, such as early evidence of DHF.
- Platelet transfusions are not effective for preventing or controlling hemorrhage, but may be warranted in severe thrombocytopenia (<10,000/mm3) and active bleeding.
- Prophylactic platelet transfusions in patients with severe thrombocytopenia without active bleeding are generally not recommended.
- Patients with significant bleeding may require blood transfusion. However; subsequent hematocrit measurements must be interpreted with caution critically assessing the adequacy of fluid repletion.
- Careful clinical detection and management of dengue patients can significantly reduce mortality rates from severe dengue.

Case Definition:

Clinically compatible case of Dengue like illness: Any person with acute febrile illness of > 2 days and <10 days with two or more manifestations from severe headache, myalgia/ arthralgia, retro-bulbar pain, severe muscular pain, severe backache or joint pain, platelets <150,000 and hemorrhagic signs.

Suspected Case: A clinically compatible case of dengue-like illness, dengue, or severe dengue with an epidemiologic linkage.

Probable Case: A clinically compatible case of dengue-like illness, dengue, or severe dengue with laboratory results indicative of probable infection

Confirmed case: Suspected/ Probable case may be confirmed by lab tests

Criteria for epidemiologic linkage:

- Travel to a dengue endemic areas or presence at area where outbreak of dengue was ongoing since last 2 two weeks.
- Association in time and place with a confirmed or probable dengue case.

Laboratory Diagnosis: Collect 3-5 ml venous blood/ serum of any suspected patient in sterile venoject tubes. Tight and seal it with full biosafety precautions. Label and pack it properly in triple packing with ice packs and transport to lab along-with complete history form. Transport the sample to the provincial labs for dengue ELISA and PCR testing (if available) or send to Virology Department of PHLD at the National Institute of Health, Islamabad. Time period for test is critical and mentioned below:

- Dengue NS1 antigen can be detected in the serum as early as 1 Day Post Onset (DPO) of symptoms and up to 18 DPO.
- Serological detection by IgM ELISA after 5 days of the onset of illness

- Molecular detection using Real-time PCR test within one week after onset of illness
- IgG is detectable at low titer at the end of the first week of illness and slowly increases. In contrast, during a secondary infection, antibody titers rise extremely rapidly. High levels of IgG are detectable even in the acute phase and they rise dramatically over the proceeding two weeks.

Surveillance for human infections: Kindly evaluate the suspected case(s) or clustering of Dengue fever as per case definition. This communication may please also be distributed to the districts health officials and other stakeholders for information and action. Prepare a line-list for all the suspected cases with information (demographic, clinical & risk factor) and share with DSRU at provincial DGHS Office and NIH. The Field Epidemiology and Disease Surveillance Division (FE&DSD); NIH may be contacted for technical assistance on Tel: 051-9255237 and Fax No. 051-9255575.

Note:

i. All health and laboratory personnel should ensure strict adherence to the **Standard Precautions** for handling any suspected DF/DHF cases and samples.
ii. The National Guidelines on VHFs, including Dengue Hemorrhagic Fevers are available at the NIH website www.nih.org.pk.

Mode of transmission & preventive measures for Dengue and Chikungunya are annexed herewith

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